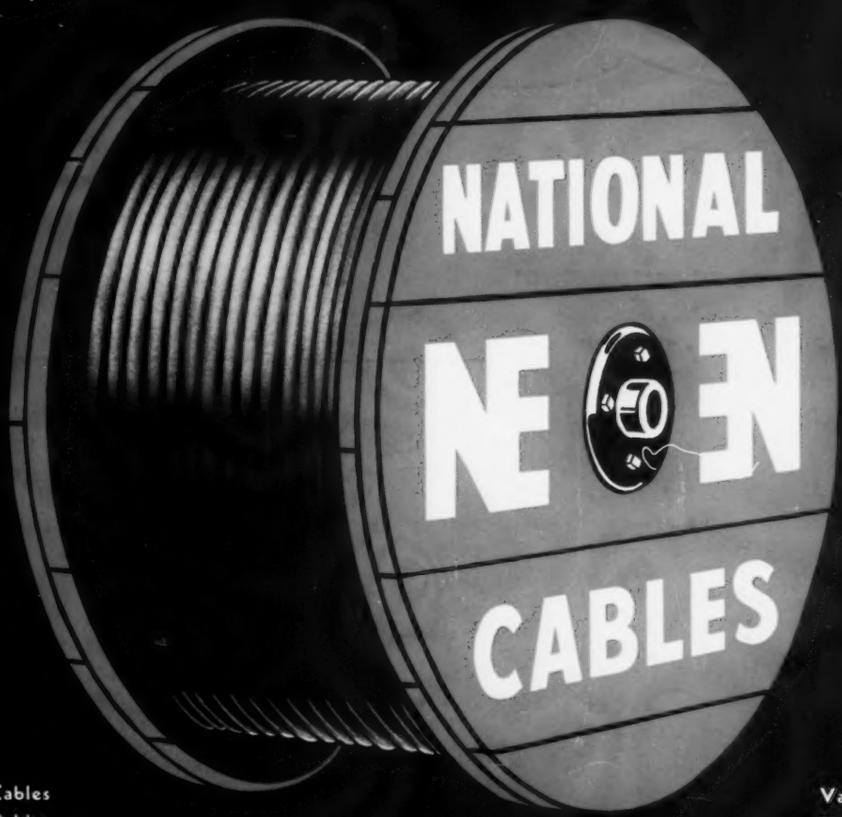
ELECTRICAL WEST

Quality . .



Braid Covered Wires and Cables
Lead Covered Wires and Cables
Bare Copper Wires and Cables
Weatherproof Wires and Cables

Varnished Cambric Cables
Flexlay Parkway Cables
Indestructo Cords and Cables
Service Entrance Cable

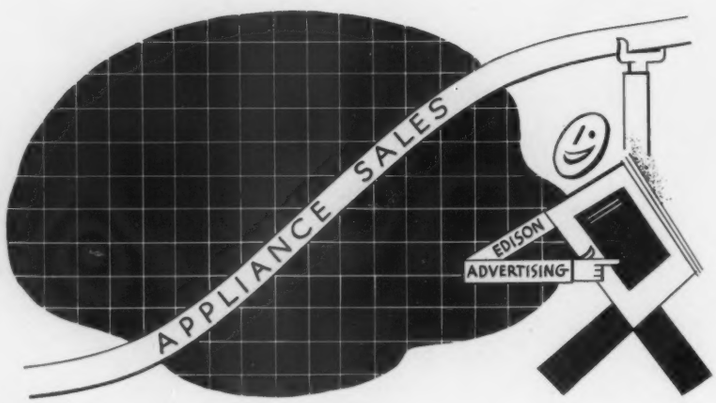
NATIONAL ELECTRIC PRODUCTS — WIRING SYSTEMS — WIRES AND CABLES

National Electric
PRODUCTS CORPORATION
Pittsburgh, Pa.

FLAME RETARDING SAFE-COTE REG. U.S. PAT. OFF. MOISTURE RESISTING
FIRE STOP WIRES & CABLES

PACIFIC COAST SALES OFFICE and WAREHOUSE • 400 POTRERO AVE. • SAN FRANCISCO, CALIF.

GOING UP



Electric Appliance Sales January 1 to July 31, 1935 as compared with same period of 1934

Ranges	**200%**
Water Heaters	**696%**
Refrigerators	**197%**
Washers	**139%**
Ironers	**137%**
Vacuum Cleaners	**190%**
Radios	**141%**
Irons	**144%**
Miscl. Small Appliances	**150%**

(Figures are computed on number of units)

Good news. Under the pressure of intensive advertising by the Edison Company, together with greater dealer aggressiveness, electric appliances of all types have shown steady sales gains throughout this year. Figures available for the first seven months of 1935 compared with the same period of 1934, indicate how the electrical business of Southern California has prospered in this upswing.

While Edison advertising does not claim entire credit for this improved electrical activity, we think you will agree that without this heavy advertising support these sales records could not have been attained

Edison

SOUTHERN CALIFORNIA EDISON COMPANY LTD.

11-35

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ELECTRICAL WEST

With which are consolidated the "Electrical Journal," the "Journal of Electricity, Power and Gas," and the "Journal of Electricity."

ESTABLISHED 1887

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Contents for November 1935

Volume 75 Number 5

Let Customers See It Too... 17
"Maybe," Writes Electras' Husband 19
Engineering Symposium—Rural Electrification..... 20
Goodwill Building—A New Contest 26
Rural Load Building..... 28
Trade Associations..... 30
Bill Jones Speaks on Labor.. 34
Cooperation on Parade..... 35
Editorials 44
Significant Trends..... 46
News of Note..... 52
Where to By It in the West.. 63

▼

• REA (nickname for Rural Electrification Administration) is pretty much in the headlines these days, thanks to adroit publicity well seasoned with pathos and sentiment. Electrical West, knowing the West to have done more than any other region to electrify farms, has asked engineers who have had real, not alone theoretical, experience building rural lines for their opinions, methods, costs, and estimates of what yet remains to be done. Manufacturers, wholesalers, contractors, as well as utilities will derive perspective as to their own possibilities in rural electrification from this exchange of competent fact and opinion.

•

• METERS, contends a clever manufacturer, evidently were designed so that only the initiated would be able to read the high sign—hence they contribute not a little to the suspicion in which the industry finds itself bathed. He suggests a meter that anybody can read, and tells why.

•

• GOODWILL BUILDING is conceded to be the industry's chief problem. With this number the "Business Building Brainstorms" give way to brainstorms—or better—to build good will. The same rules and prizes pertaining to the Business Builders hold for the Goodwill Builders. Who hasn't given vent to a thousand ideas for improving public relations? Send such bright ideas to the Editors and make some of these ideas profitable to you and beneficial to the industry.

•

• ASSOCIATIONS of all branches of the industry were particularly active last month. Reports on their programs, their problems, their meetings in this issue will keep you informed. Knowing of their activities will assist you to derive the most from their constructive undertakings.

•

Next Month

• PROBLEMS of the industry will have been boiled down by the guidance committees from the many frank and plainspoken papers and discussions at the P.C.E.A. conclaves held last month and will be presented, together with pertinent quotations from the discussions to prepare members of the industry to seek and submit solutions to these difficulties. Full details of that procedure will be outlined in that number.

Sales Talks that SOLD Appliances

CASE HISTORY NO. 11

Selling an ELECTRIC WASHER

BILL SMITH, master salesman, is a prospect himself. A few weeks ago the salesman of the Blank Electrical Wholesaling Co. came in and sold Bill on the profit possibilities of an electric washer campaign for the fall months. In doing this, the jobber's salesman pointed out to Bill that an electric washer in the home is in itself a powerful salesman for additional home electrification because this electrical servant does so much with such little energy consumption that it sells the economy, comfort, and convenience of using electricity for every domestic chore.

The washing machine manufacturer had prepared some fine selling material in the way of display cards, mailing pieces, etc. and would help Bill with his advertising in the campaign. Being experienced in good sales methods, Bill planned his campaign on the ability of a good demonstration to build interest and desire in the minds of his prospects. He designed an attractive window display and devoted a good share of the main floor of his store near the door to washing machine display and demonstrations. As usual his sales talk is built to stress the many advantages derived from ownership of an electric washer. He is relying upon direct mail and a modest, but effective, advertising campaign on one of the lower priced models to bring prospects into the store. A woman has just entered the store.

PROSPECT: "I would like to look at the washer you advertised in the paper."

BILL: "It would be a pleasure to show it to you. However, it might help you appreciate just how convenient and easy it is to wash electrically if you would watch this demonstration for a moment."

¶ Bill leads the prospect to the demonstrator and away from the idea of the low-priced machine which was used as a leader to attract the prospect into the store. Now Bill applies the sound principle of selling by beginning to sell from the top of the line down rather than from the bottom up.

BILL *(asking the demonstrator to wash certain items about which he will speak)*: "This fine modern appliance will save you hours of time, plus your entire laundry bill because it will wash anything from the daintiest child's dress to the heaviest blankets—quickly, safely and thoroughly. You will notice how this machine gently forces the water through the fabric, cleaning it thoroughly. Then the clothes are placed in this drier which whirls at a high speed, throwing the water out by centrifugal force and leaving the clothes almost dry enough to iron immediately. It takes just a little while to wash the dirty clothes the family accumulates in a week."

PROSPECT: "I had no idea it was as easy as this. The machine certainly takes the drudgery out of wash day, doesn't it?"

¶ Notice that the actual demonstration has a powerful appeal to the prospect. She mentally contrasts the work over a tub of hot water with the ease of the method shown.

BILL: "It certainly does. Not only does it relieve you of the burden of providing the family with clean clothes but it does so at a real saving, too."

PROSPECT: "Is this the machine you advertised?"

BILL: "No, it isn't. The machine we just looked at is one of the finest models on the market. It has every feature possible that will make home laundering easy, economical and convenient and is built of the finest material to last for years of hard service in the home. All of our models, even the least expensive, however, employ the same sound principles of washing clothes, but their price depends upon their size and the accessories which you wish."

¶ Here Bill expresses the philosophy of selling from the top of the line down. He can enthusiastically use all of his superlatives on the best model in the line and make the prospect want a washing machine. If she cannot afford the high priced machine he can truthfully account for the lessened price by the elimination of certain features rather than the reduction of quality.

PROSPECT: "How much is this machine?"

BILL: "This machine that washes so quickly and thoroughly with its improved principle of agitation and that dries the clothes almost ready for

ironing with its centrifugal drier, and has the automatic pump which empties the tub for you in a jiffy, sells for $....."

PROSPECT *(surprised)*: "Why that's much more than the machine you advertised. I thought that we might be able to afford a machine at the advertised price, but this is out of the question."

BILL: "Is it out of the question entirely? Yes, I can appreciate that this machine may be too large for your purpose, yet I feel sure that in our line of washing machines we can find one that will fit both the requirements of your family and your budget. As I said before, every model is built to the same high standard and of the same high quality as the machine we just looked at. By eliminating some of the de luxe features I feel sure you will be able to select a washer that will enable you to enjoy the advantages of this new electrical servant. For instance, this model is very popular. It has the large size tub, the automatic pump, but instead of the centrifugal drier it has this safety wringer. It sells for only $....., and it will give you years of economical service."

PROSPECT: "Even that is more than we can afford right now. There are so many other things that the family needs right now that I think I had better wait until later before buying an electric washer."

¶ Here the prospect injects a common stumbling block for the salesman; that is, the family want list which may be headed with a new car, or a radio, or new furnishings, a fur coat or any of the thousand and one items that are in competition for the prospect's spare dollars. Watch Bill overcome this objection.

BILL *(smiling)*: "I know just how you feel about that. My family, too, has a list of items which we are purchasing as rapidly as we can afford. However, I think I can show you where an electric washing machine will help you get some of these other things your family wants. An electric washing machine not only provides the family with an abundant supply of clean clothes and saves much drudgery for you, but it also is a fine investment that pays cash dividends. There are thousands of women in this city who will tell you of its economy. For instance, you can wash everything in this machine, even such items as blankets and others which are usually sent to the cleaners or laundry in the average family. This represents an immediate cash savings. Also, by washing your clothes in your own home you can be sure that they will last much longer. Many of my customers have told me clothes last twice as long when they are washed at home in a modern electric machine. This means a definite saving which will soon pay for the washer and continue on thereafter to help you buy some of the other things that the family desires. Another thing, hard to measure, but which is also to be considered, is the fact that you, yourself, will save many hours of time that can be devoted to sewing or other activities, and really these also represent money saved."

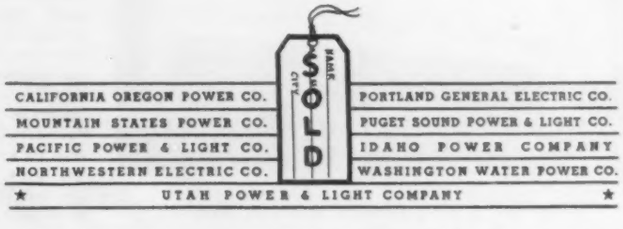
PROSPECT: "Yes, I suppose a washing machine is a good investment, but——"

BILL: "It certainly is and you can purchase it on budget terms so small that they will hardly be missed. Why not let me send this model out? It is large enough to fill the needs of even a large family and for just a little more than the price of the washer you intended to buy, you will get many additional features which will simplify your housework and make wash day an incident rather than drudgery."

PROSPECT: "If we can arrange satisfactory terms I think I will take it. I have wanted a washing machine for a long time and if it is as economical as you say it is we can afford it right now."

BILL: I'm sure that budget terms can be arranged to suit your convenience. You will be pleased with your new electric servant and I know that after you have found out how easy it makes washday, you will wonder how you managed to get along without it. The savings in time and money it makes possible practically enables you to buy it out of its earnings. You won't regret your wise decision.

¶ Bill has employed the sound selling principles in his washer campaign. He first brought the prospect into the store by advertising a price leader. Then he showed her a demonstration which proved the advantages of washing electrically. After this he began selling from the high-priced unit and only retreated toward the lower-priced unit with the assurance that in nine cases out of ten he would be able to stop somewhere above the bottom. In actual experience half of the sales made this way are above the center of the price line. Bill has made a larger sale with more profit to himself and the prospect has a machine with which she will be better satisfied.


MADE IN U.S.A.
CALIFORNIA OREGON POWER CO.
MOUNTAIN STATES POWER CO.
PACIFIC POWER & LIGHT CO.
NORTHWESTERN ELECTRIC CO.
PORTLAND GENERAL ELECTRIC CO.
PUGET SOUND POWER & LIGHT CO.
IDAHO POWER COMPANY
WASHINGTON WATER POWER CO.
UTAH POWER & LIGHT COMPANY

Occidental

Electric Ranges

offer Longer Discounts to the Dealer... More Revenue to Utilities

OCCIDENTAL Electric Ranges carry **Long Discounts** to the dealer.

Dealers can now make **Big Profits** selling electric ranges.

Yet the superb new Occidental electrics retail for **less money** than you would ordinarily expect for ranges of their outstanding quality. That means Occidental Electric Ranges sell easier and the trade can enjoy faster turnover.

Utilities can look forward to 100 per cent dealer participation in electric range sales plans—with a result of having more revenue added to their lines.

Write for full details to our San Francisco address

STEIGER & KERR STOVE & FOUNDRY COMPANY

Manufacturers

18th & Folsom Sts., San Francisco, Calif.
Branches: **Los Angeles, Calif.; Portland, Ore.**

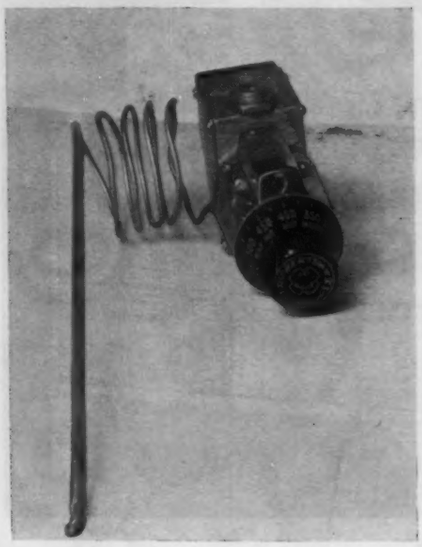
Model 85 A

Model 90 A with Built-in Kitchen Heater

66 Years of Manufacturing Experience

The answer to these greater electric range values, which offer long discounts to the trade, lies in Occidental's 66 years of manufacturing experience — experience that knows how to manufacture economically and pass the savings along. In spite of thrift in manufacturing, Occidental electrics are luxurious, full-weight ranges. Beauties to look at, convenient to use and unexcelled for long years of the most perfect cooking.

Model 80 A



Front View

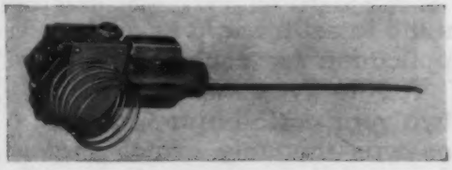
Occidental

Electric Ranges

equipped with

Robertshaw

Oven Heat Controls



Side View

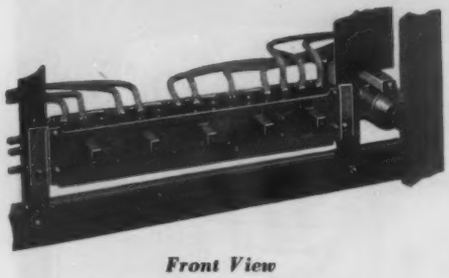
All Occidental Electric Ranges are equipped with the Model XEI Robertshaw Oven Heat Control. This is a liquid type, the successful operation of which can be assured by reason of the fact that more than 500,000 of the same type on other appliances are in use today. The rigid end piece or bulb which you see in the picture, is located in that section of the oven which gives the best control of the oven temperature. This bulb is connected to a bellows by means of a capillary tube, the entire assembly of which is filled with a liquid which is perfectly stable up to 650° F., thus assuring accurate control of the oven temperature at every setting of the dial. The movement of the bellows upon application of oven heat to the bulb actuates the switch mechanism. When the oven reaches the temperature at which the dial is set, a vertical red line appears in the small heart-like opening above the dial.

Since 1899, Robertshaw has specialized in the manufacture of thermostatic controls. During these years, in the Robertshaw Laboratories, Robertshaw engineers have devoted their entire time to the development and perfecting of thermostatic controls.

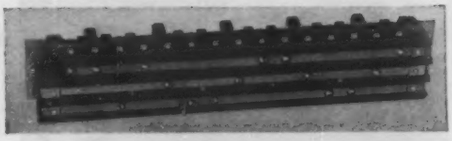
Today, in more than 2,400,000 homes, the name "ROBERTSHAW" on the oven heat control is a guarantee of accurate, dependable control of the oven temperature.

The model XEI Robertshaw Electric Oven Heat Control is the product of many years of experience in the field and in the Robertshaw Laboratories. It carries with it the same guarantee of accuracy and dependability recognized wherever Robertshaw controls are used.

ROBERTSHAW THERMOSTAT COMPANY, Youngwood, Pennsylvania



Front View



Back View

Occidental chooses

DIAMOND H SWITCHES

ALL Occidental Electric Ranges are equipped with the new "Diamond H" Toggle Type heater switches for top plate and oven control.

Occidental Ranges represent the latest thought in design, engineering, and practical application for cooking in the household. The "Diamond H" Toggle Type switch conclusively tried and tested over a two year period in actual use on well known electric ranges was the only switch that measured up to the service demanded by the makers of Occidental Ranges.

Despite the fact that unsuccessful attempts have been made to produce a practical toggle switch, it remained for "Diamond H" engineers to solve the problem and the result is a revolutionary switch that completely meets the needs of the modern electric range.

These switches have been in use on many well known ranges over a long period—long enough to prove their dependability, exceptional service, and that the "Diamond H" Toggle Switch is good for the life of the range.

An outstanding contribution to the electric range industry.

Bulletin No. 17 describes these switches

THE HART MFG. COMPANY, Hartford, Conn.

WESIX
ELEMENTS
are
Standard Equipment
with

Occidental Electric Ranges

The history of the Wesix Electric Heater Company is **The History of the Correct Application of Electricity to Heating,** whether it is the applying of heat to cooking, to room heating or to water heating.

For 16 years, many of the largest utilities in the United States have depended upon Wesix Elements for replacement units, even though Wesix never made an electric range!

Wesix patents, Wesix skill, therefore, have been long recognized as fundamental contributions to the perfection of the electric range.

New High Speed Top Elements

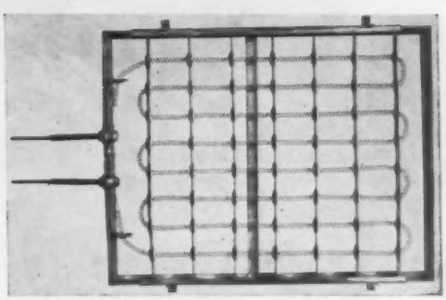
The new Wesix High Speed Top Elements are made of the highest quality Resistance Wire coiled in an especially designed Ceramic Base. These long lasting elements are standard equipment with Occidental Electric Ranges.

Wesix PROTECTED High Speed Top Elements are also available. A pure Nickel Screen covers the element, further increases efficiency and speed and protects the element. Here is the most practical protected element made.

Efficient Oven and Broiler Elements

The rigid, non-warping Oven and Broiler Elements, made by Wesix for Occidental, are made so that Resistance Coils can be renewed if it should be necessary. This feature greatly facilitates repair and cuts the cost of repair because the coil can be re-strung easily, inexpensively and quickly. The Channel Frame is made of cold rolled Nickel Plated Steel, electrically welded. The coil supports are made of stainless steel. The Knife Blade Contacts are forged out of Stainless Steel which adds to their long life and allows the whole element to slide out easily when the oven is being cleaned.

Notice these outstanding features of the new Occidental Electric Ranges!



Oven and Broiler Element

New High Speed Top Element

WESIX ELECTRIC HEATER COMPANY

390 First Street, San Francisco, Calif.

PORTRAIT OF YOUR BEST CUSTOMER!

Sell him these

Make Santa Claus work for you. A large percentage of his Christmas gifts this year can be electrical gifts — providing *you* sell them to the gift-givers. Graybar can help you in your selling job by providing a varied line of attractive and up-to-date electrical appliances. Appliances from Graybar are dependable, *quality* appliances. They help make satisfied customers — and more sales in the future. They are backed by a reputation for quality that goes back 66 years to 1869.

NOTE TO ELECTRICAL DEALERS . . . CONTRACTORS . . . POWER AND LIGHT COMPANIES

Graybar offers dependable service on a complete line of quality electrical items—wiring materials, lighting and signaling equipment, power apparatus, line material, lamps — in addition to a complete line of outstanding electrical appliances.

Graybar

OFFICES IN 77 PRINCIPAL CITIES. EXECUTIVE OFFICES, GRAYBAR BLDG., NEW YORK

END
Open-coil replacement
TROUBLE..

• *Calrod closed unit sheathed in Inconel.*

• *Hotpoint Automatic Electric Range with Inconel Calrod units and top of Monel Metal. The Mayfair, model RA-86.*

. . *and* KEEP *Electric Ranges* ON THE LINE!

OPEN-COIL heating units, as you know, are subject to the damaging effects of spillage and fracturing of the fire-brick by heavy kitchen utensils.

The result – short life, the nuisance and cost of replacing, and loss of current consumption. All this leads to loss of good-will, customer dissatisfaction. And worse yet, it opens the door to competition.

Put an end to all this. Sell electric ranges equipped with Inconel-enclosed Calrod heating units.

Back of the success of the Calrod design is the fact that its resistance-wire is enclosed in a sheathing of Inconel.

Inconel is a Nickel-Chromium alloy offering two outstanding advantages:

1. *Extreme Resistance to Oxidation*
2. *High Strength and Toughness*

No wonder Inconel Calrod units are establishing a new standard of long life and element durability!

Moreover, Inconel Calrod units offer quicker warm-up – a potent sales argument when face to face with a prospective customer. The reason for this is that Inconel, with its high-strength and toughness, provides full protection to resistance wires. All heat-absorbing fire-brick is eliminated.

Electric ranges are your running fullbacks – the ground gainers of load building. Keep them on the line.

Keep each unit of every range in your territory on the line – indefinitely and without interruption – by selling ranges equipped with Inconel Calrod units.

Write today for complete data.

THE INTERNATIONAL NICKEL COMPANY, INC.
67 Wall Street, New York, N.Y.

INCONEL*

* Reg. U. S. Pat. Off.

To help make your Better Light-Better Sight program more effective

GENERAL ELECTRIC ANNOUNCES

. . . NEW *Instructolite* FOR DEMONSTRATING ADVANTAGES OF NEW, PRESCRIBED LIGHTING

● A NEW type of lamp, the *Instructolite*, has just been introduced by General Electric for demonstrating the advantages of new, prescribed lighting. The *Instructolite* —which sells for $25.00—is designed primarily for the education of utility employees whose chief interest is the promotion of better lighting for better seeing.

The lamp, made of bronze, is so constructed that both good and poor lighting may be convincingly demonstrated. Its plaited shade is supported on frames so designed that the bottom radius may be expanded or contracted.

The base of the lamp is of telescopic construction to show how light is affected by heightening or lowering the shade. A tape measure of steel is built into the lamp base. In addition, a rheostat is a component part of the lamp and may be used with a MAZDA Photoflood lamp for the selection of lighting intensities that provide the most comfortable seeing. Other features include shade materials to show how better and lighter colored shade materials enhance the quality of light; and a removable glass diffusing bowl for showing the contrast between raw and diffused light.

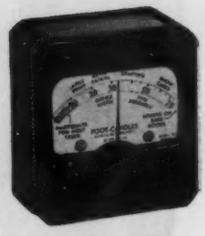
For detailed information write to Dept. 165, General Electric Company, Nela Park, Cleveland, Ohio or to the Sales Division office nearest you.

1200 ORDERS FOR TRAINING COURSES

In the past sixty days, more than 1200 orders have been received at Nela Park for the new G-E home lighting training courses designed for Supervisors, Advisors, and Retail Sales people.

Utilities and retailing organizations whose employees are using these training courses report them as the least expensive, the most effective, and the most complete home lighting sales training ever presented. If you are not already using these training courses as part of your Better Light-Better Sight program, you are overlooking an important opportunity.

NEW G-E LIGHT METERS



Demand for the new compact General Electric Light Meter has exceeded all estimates. For the first time, an accurate light measuring instrument—not much bigger than a package of cigarettes and selling for only $11.50—has proved so practical that business executives, chain store operators, building owners, and others interested in securing better lighting are buying them and using them. Every utility executive, every salesman, and others interested in promoting lighting for better seeing should have one of these new Light Meters for his individual use.

827,450 I. E. S. TAGS ISSUED

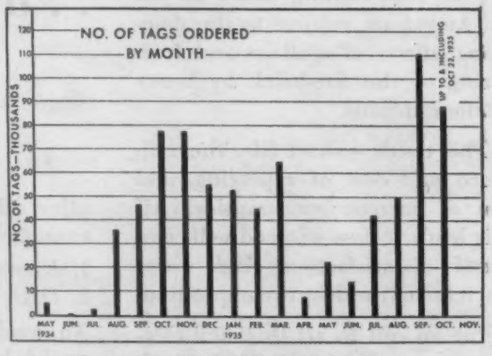

NO. OF TAGS ORDERED
BY MONTH
NO. OF TAGS—THOUSANDS
UP TO & INCLUDING OCT 22, 1935
MAY JUN. JUL. AUG. SEP. OCT. NOV. DEC. JAN. FEB. MAR. APR. MAY JUN. JUL. AUG. SEP. OCT. NOV.
1934
1935

Chart courtesy Electrical Testing Laboratories

The above chart presents a graphic story of the growing popularity of I. E. S. Better Sight Lamps. Up to October 22, 1935 there has been a big increase each month over the corresponding month of last year. Remember that every I. E. S. Better Sight Lamp installed means increased lighting load for the utility . . . and the market for these lamps has barely been scratched.

EDISON MAZDA LAMPS

GENERAL ELECTRIC

For further information on any phase of the Better Light-Better Sight Program, write to Dept. 166, General Electric Co., Nela Park, Cleveland, O.

NEW 1936 PROGRAM WILL MEET UTILITIES' THREE-FOLD PROBLEM

● Never has the Frigidaire franchise been as valuable to Public Utilities as it will be during 1936. Next year's Frigidaire plans will provide you with the greatest opportunity you've ever had to meet your three major load-building problems:

1. ***Selling More Electric Refrigerators***—With new products, new plans and new sales strategies—plus the tremendous sales value of the biggest name in refrigeration—your promotional and sales effort will produce *more* when applied to Frigidaire.

2. ***Increasing Customers' Good-Will***—It is not enough merely to build load . . . the increased revenue must come from customers who are satisfied with their increased bills. Frigidaire's recognized low cost of operation, its undisputed leadership, its many product superiorities and its enviable record of long and dependable service make and keep customers happy.

3. ***Increasing Total Appliance Sales***—Leading utility executives tell us Frigidaire's selling plans are sounder and more productive, and have adapted them to their entire appliance set-ups with record-breaking results. In 1936, more than ever before, Frigidaire will supply impetus for greatly accelerated overall activity.

Public Utilities capitalizing on Frigidaire's many product and sales advantages have done phenomenal three-way jobs of building load, customer good-will and total appliance sales. We will be happy to present a program to your executives at your convenience. Meantime, check our record and see the truth of the statement: *"You'll Do Better with Frigidaire—in 1936!"*

FRIGIDAIRE CORPORATION • Dayton, Ohio

You'll do Better with

FRIGIDAIRE IN 1936

THE GENERAL MOTORS REFRIGERATOR

MAINTAIN HIGH ENGINEERING STANDARDS WITH 8-STRAND

A·C·S·R·

● Lower first cost of rural lines *can* be achieved without compromise with engineering standards that have stood the test of years of experience.

For this new 8-strand A. C. S. R. (7 Aluminum over 1 steel) is 25% stronger. With it you can lengthen your spans materially, with consequent savings in line cost, and without increasing stresses beyond reasonable and safe values.

To this assurance of dependability, add the reliability of A.C.S.R. that comes as a result of the protection that the Aluminum strands give to the steel, when the inevitable flash-overs occur. Remember that the Aluminum strands themselves burn less deeply, because arcs striking Aluminum are unstable and cause only surface burns.

Make a note, too, that fittings for this new conductor are interchangeable with those for the equivalent 7-strand cables.

Ask now, for complete data on this new stranding. ALUMINUM COMPANY OF AMERICA, 1832 Gulf Building, Pittsburgh, Pa.

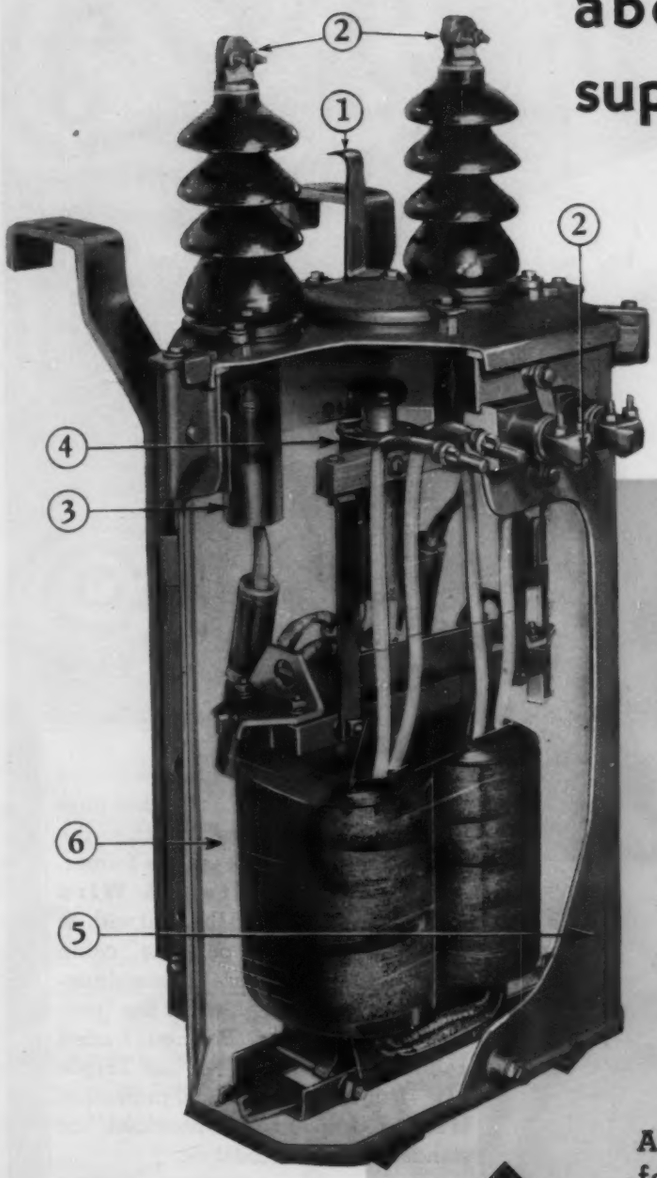
ALCOA ALUMINUM

Look Inside

Most Distribution Transformers look about the same, on superficial examination

But!

Before Buying . . .
Check these points



(1) Are the bushings coordinated? *

(2) Are solderless connectors provided?

(3) Are bushing shanks under oil?

(4) Is a tap changer provided?

(5) Is the protective finish BAKED on the tank?

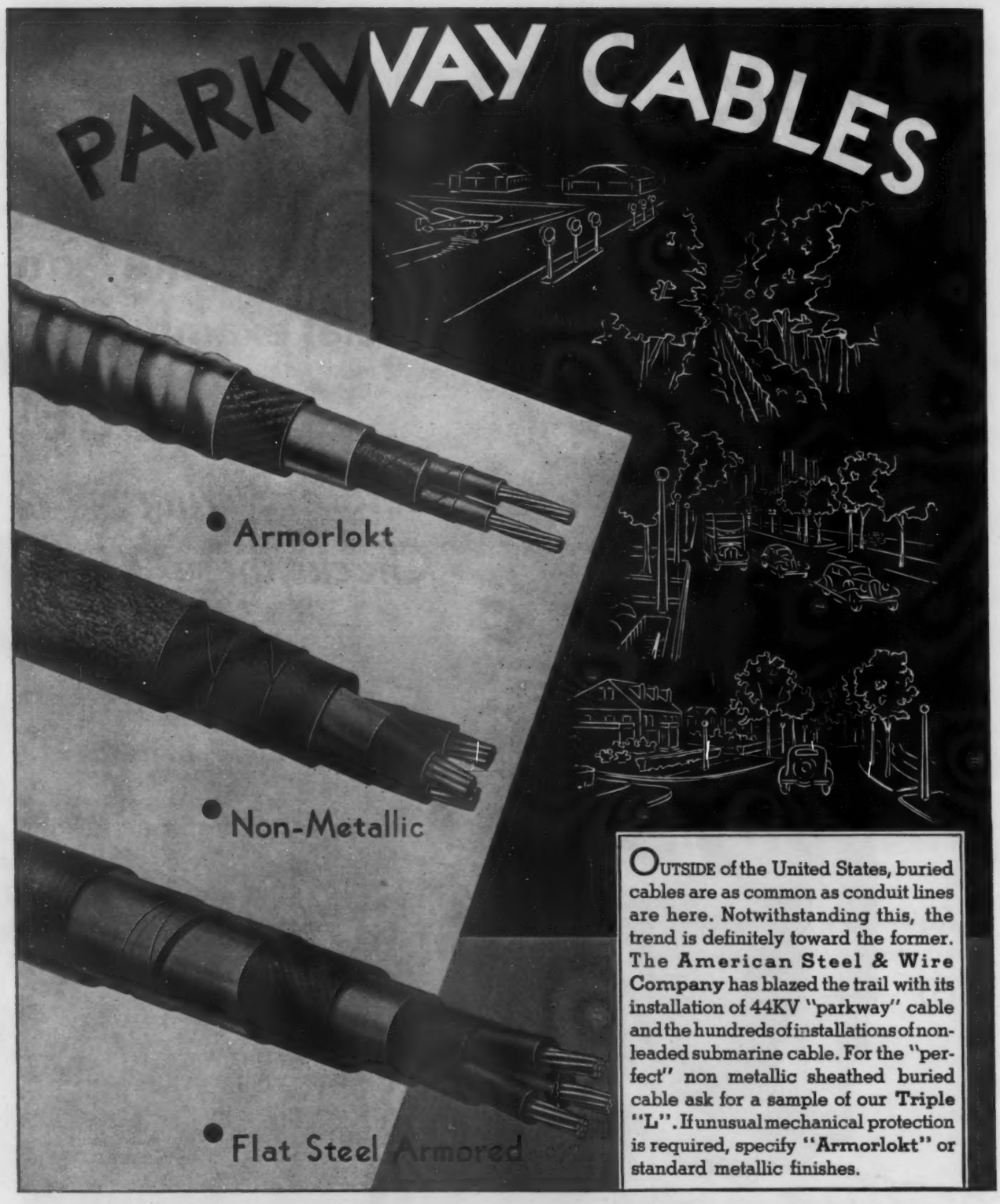
(6) Is the transformer oil-tight, permitting shipment completely filled with oil?

* A gap is provided for each bushing.

Allis-Chalmers surge protected transformers have all of these features and many more. For the "Inside Information" on distribution transformers, write for Bulletin 1173.

ALLIS-CHALMERS

— Allis-Chalmers Manufacturing Company, Milwaukee, Wisconsin, U.S.A. —



OUTSIDE of the United States, buried cables are as common as conduit lines are here. Notwithstanding this, the trend is definitely toward the former. **The American Steel & Wire Company** has blazed the trail with its installation of 44KV "parkway" cable and the hundreds of installations of non-leaded submarine cable. For the "perfect" non metallic sheathed buried cable ask for a sample of our **Triple "L"**. If unusual mechanical protection is required, specify **"Armorlokt"** or standard metallic finishes.

AMERICAN STEEL & WIRE COMPANY

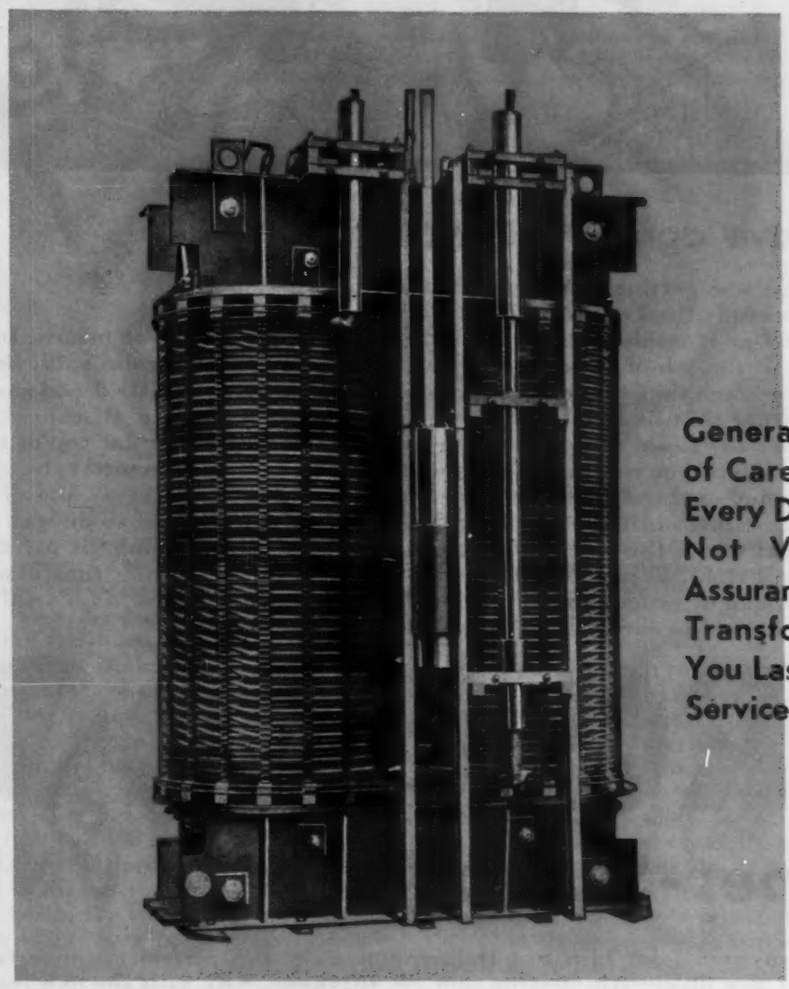
United States Steel Corporation Subsidiary

Pacific Coast Distributors

COLUMBIA STEEL COMPANY

SAN FRANCISCO LOS ANGELES PORTLAND SEATTLE

YOU PROFIT FROM OUR ATTENTION TO THE THINGS YOU CANNOT SEE



General Electric's Policy of Careful Attention to Every Detail—Whether or Not Visible—Is Your Assurance that G-E Power Transformers Will Give You Lasting, High-quality Service

SINCE its introduction twenty years ago, the concentric circular-coil construction has been a highly important factor in the successful operation of more than 66,000,000 kva of G-E power transformers.

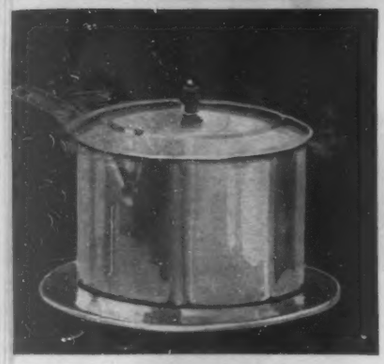
Among the features that are highly important to the user are:

1. **Freedom from corona**
   As the transformer is completely free from corona during insulation tests, the insulation is in perfect condition when the unit is shipped. This assures a high degree of service reliability.
2. **Free passage for cooling oil**
   Thorough ventilation results in evenly graded temperatures from top to bottom of the transformer, and maximum ability to handle emergency loads. In addition, the horizontal coils expand and contract uniformly, thus preserving the high dielectric strength of the insulation.
3. **Exceptional mechanical strength**
   Every turn is supported at regular intervals by radial spacers, which form a group of supporting columns that hold the winding securely in place —even when the transformer is subjected to the most serious short-circuit conditions.

These are important factors in the lasting service, continuity of operation, and low maintenance expense which characterize G-E power transformers. Ask the nearest G-E office for further information, or write General Electric, Dept. 6B-201, Schenectady, N. Y.

310-13

GENERAL ELECTRIC



THE FASTEST WAY TO COOK

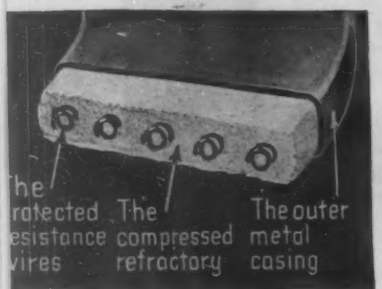
Actual, all-over metal-to-metal contact. The flat metal top of the Chromalox Unit transmits heat the most efficient way—by conduction.

"SPILL-OVERS" CANNOT TOUCH THE RESISTANCE WIRES

The protected wires of the Chromalox Unit are immune to "spill-over" damage. (Note: only the inside ring is used for small utensils.)

THE EASIEST UNIT TO CLEAN

A simple wiping off does the trick — no grooves or channels. No shock — the wires are insulated from the top.



HERE'S THE SECRET

The wires are embedded in a refractory which is encased in corrosion-resistant metal and then compacted under hydraulic pressure. The famous Chromalox principle.

"I'd have agreed with you a week ago

My range was getting slower and slower, and besides I was getting awfully tired of being so careful that things didn't boil over, for fear it would cause a "short circuit" — whatever that means, to say nothing of the job of cleaning the burners, when something did spill. But —

"A week ago that electrical dealer down on Main Street, called and showed me a burner that he said would cook much faster than mine. Of course, you know they say those things anyway — but this burner had a flat top of some dark metal, and you couldn't see any wires anywhere — they seemed to be sealed inside somehow, and the man said nothing could touch them, and if you spilled anything on it, nothing could happen and all you had to do was wipe off the flat top of the burner, like a coal range. He said he could fit my range with it all right, because it had "adaptor rings" or something that made it fit any make of range — and he offered to put it in for a few days trial free because he was so sure I would like it. He said it was a

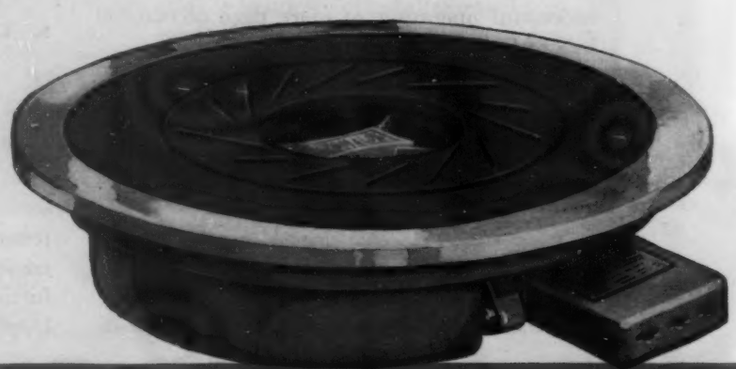
CHROMALOX
Super-Speed RANGE UNIT

"Well, anyway, I let him put it in — and girls, it's perfectly wonderful! I wouldn't give up electric cooking now for anything. Why with the new burner it's *much faster* than I ever thought it could be, and *so* clean! The man from the electrical shop is coming tomorrow to put all CHROMALOX top burners in my range, and while he's here I think I'll talk to him about the new outlets we have needed for a long time, and a new fixture for Junior's room".

• • •

And that's one way that dealer's profits are made, and electric load is built — over the bridge tables. Many a dealer, after installing a single CHROMALOX range unit, has found new orders sprouting up all over town. And many a power company has found that service calls take a sharp drop wherever CHROMALOX Range Units are doing the cooking.

This range replacement business is waiting for you. We will help you to get it. Use the coupon below.



A WORD TO POWER COMPANY SERVICE MEN AND EXECUTIVES

Keep the ranges on your lines up-to-the-minute—gain customer satisfaction — prevent switching to other cooking methods — and lower your service expense by renewing

←GET THESE VALUABLE BOOKS

Mail This Coupon with your business letter head to us or to our nearest representative.

EDWIN L. WIEGAND CO.
7540 Thomas Blvd., Pittsburgh, Pa.

Without obligation, send us complete data about Chromalox Super-Speed Replacement Range Units and how we can make money selling them.

Signed.....

Represented by

MONTGOMERY BROTHERS
911 Western Ave., Seattle, Wash.
524 S. W. Pine St., Portland, Ore.
61 Fremont St., San Francisco, Calif.
912 E. 3rd St., Los Angeles, Calif.

THE PETERSON COMPANY

ELECTRICAL WEST

[*Devoted to the economic production, transmission and distribution of electric power and its application to industry, commerce and the home in the Pacific Empire, and to the sale and distribution of electrical utilization devices, equipment and appliances in that area*]

November 1935

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Let the Customer See it Too!

An Interview
With JAMES B. BUMAN
Residential Sales Manager,
Northwestern Electric Co.,
Portland, Ore.

By HENRY W. YOUNG

THE utilities have a grand product to sell. They are making great strides in selling that product or service. They are bringing about the electrified home in its truest sense and showing the public what a wonderful thing that home can be. Yet there is something lacking in the attitude of the public toward the utility. People will go into a store, pay the price that they must for a piece of merchandise, and then come away liking the merchandise and praising the store. But after they have electric service installed they pull a long face and cuss at the bills and the utility rendering them.

In a great measure, the utilities are themselves to blame for this attitude because they have failed to take a certain mystery out of their business. That certain mystery is in the customer's meter. Few customers yet understand it and what they don't understand they mistrust. The figure that the meter gives out at the end of the month, multiplied by the rate, is the bone of contention on the end of a string now being shrewdly manipulated by political influence. Do not blame the politicians too much. We left the string hanging out and why shouldn't they tweak it? Don't think for a minute, either, that all the customers' criticisms are expressed to us. Ninety percent of the disgruntled ones pay their bills saying nothing to us but preparing meanwhile to throw the hooks into the "damn utility" whenever they have the chance.

Now, what is this meter, after 30 or 40 years of development? Probably its insides are better, but it has exactly the same old face—four grinning dials with half the hands running in one direction and half in the other. Suppose a clock was made to register total elapsed time from the moment it was started, by two dials, one for hours and one for minutes. To ascertain the time *now*, all you would have to do would be to subtract from the present reading of the clock the reading at the last known time and you would have the present time. Arithmetically, it would be a perfect clock. From a practical standpoint, it would be a perfect mess.

In much the same category stands the electric meter today. Coupled with its mystery and complicated method of reading is the factor of the mysterious and always questioned rate. If we were seeking for complete misunderstanding and resentment on the part of the public as to our methods of doing business, the present set-up would be ideal. It is even worse than in the old days when the store keeper was the only one who could read the scales.

Everyone who has driven a car for any considerable length of time has noted the advances made in gas measuring devices. Starting with devices which only the station attendant could see, they have progressed until now the gas is measured before our eyes by means of dials having plain numerals, by having us watch the gas itself fall inside the calibrated glass chamber, by bells which clang out the "bad news," and in the newest pumps by dials that measure gallons in tenths and simultaneously compute the bill. Whatever may be our opinion as to the price of gas, we are comforted by the way in which it is measured out. We feel that, at least, the dealer is honest.

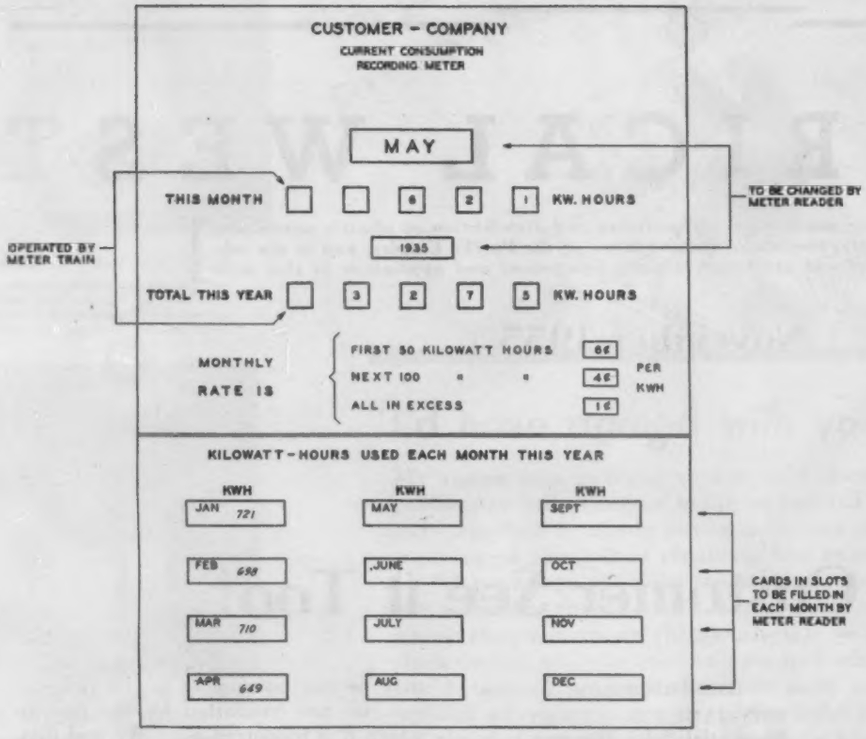
Suppose, on the other hand, there was nothing but a cumulative dial for the pump, located in the service station. In order to be in on the transaction ourselves, we would have to go into the station and read the meter before and after the fill. Then we would subtract. Then we would multiply by the rate based on some demand theory that we did not understand. Would we check our gasolene bills? No. We would take the dealer's word for it, and cuss the dealer.

It has long been my opinion that any constructive course for the utility to pursue in gaining and holding public confidence must start with the meter. It is time that the public be given a chance to "read the scales." With the decline of the demand theory to a straight one- or two-step rate, this becomes more important and practicable.

I am, therefore, presenting here, for the sake of serious discussion, my idea of a type of meter which would mean something to the customer. It would be also a constant means of checking the operation of his electrical installation, day by day and month by month, as important to him as our station measuring and recording instruments are to us.

First, it will be noticed by the diagram that this is a Customer-Company current recording meter, therefore, an instrument to be used jointly. And it looks best to put the word "customer" first.

The first dial, headed by the current month, shows the customer at a glance



Suggested face of customer's meter which would permit him to "read the scales" for himself

exactly how many kilowatt-hours he has used thus far this month. The number is shown in plain figures and not by a gang of clock hands revolving this way and that. It is true that with the present type of meter the customer *could* determine his present-month consumption provided he knew how to read the meter, was successful in locating last month's bill and meter reading and could subtract. But going through all that does not make him like and admire the utility. No, indeed, he just sits back and cusses the utility company and its blind meter. Why not make it easy for him?

This first dial, then, corresponds to the trip dial on your speedometer. The meter reader throws it back to zero at the end of the month or when he reads the meter. At the same time, he manually turns up the month sign to the next month. The customer can use it as a recording instrument to measure the consumption of any individual device, with the others off. If a new washer or ironer is bought, he can find out just how much current is required to operate it. In most cases, he will be surprised and gratified at the small amount.

Furthermore, when the meter reader comes around, the figure on the dial gives the exact amount used for the month, which the customer can see for himself. Applying the rate for this amount, the bill may be rendered then and there and the transaction be made a cash one if the customer so desires.

Next below is the cumulative dial showing the total current consumed for the year. This can be tripped to zero at the end of the year. The total figure will not be of particular importance to the consumer, but it is of importance to the company, as a cumulative record eliminating all possibility of under- or over-charging the customer, over a period of time, because of mistakes on the part of the meter reader.

Plainly shown below the two sets of dials is the rate per kilowatt-hour; in this case a three-step rate is shown. With a straight one- or two-step rate, it would became a simpler matter still for the customer to check his bills if he so desired. Apparently the one-step rate is the most logical. How long would the department store, knowing as it does how to get and hold your wife's esteem, attempt to sell her 10 yards of cloth at 50 cents for the first two yards, 30 cents for the next three and 10 cents a yard for all over that? How far would a "bargain ad" get worded this way: "Grand reduction on linen. Saturday only. Three cents a yard off on the maximum demand, with a special discount of five per cent off the customer's earned rate in the third bracket"? Would our esteemed ladies lose any dignity in a scramble around that counter?

As a final feature of the meter, I have suggested at the bottom a simple record system showing month by month consumption for the year. The cards could be inserted in slots or holders by the meter reader each month. To the consumer inclined to inquire into his use of current, to see how one month compares with another, this record would be at once valuable and interesting. Furthermore, it would show him that the company is doing its utmost to make everything clear, and that it is holding nothing back.

From the mechanical standpoint, such a meter could be produced. Its adoption by the utility, however, brings up the question of the cost of replacement of a large amount of existing equipment, for equipment of a more highly perfected form. I contend that our industry has seldom been backward in this respect, when it came to current-producing and distributing equipment, in order to reduce costs. Here, then, is an element in the service, having to do with the distribution and of utmost importance in selling the product, that is antiquated to an extreme. Ways and means can be devised to accomplish the change. It can be done gradually, by putting in the new type of meter on new installations; or by putting it on all installations, the cost to be borne by the customer, and distributed over a long period; or part of the cost can be borne by the customer and part by the company. To say that it can not be done is to say that no progress is possible at the one point most important in its bearing upon our relations with the public. In the electric utility field, progress has not only always been possible, but it has been imperative, and it will so continue to be.

By whatever means the change-over might be accomplished, this venture into the field of taking the customer further into our confidence could be made boldly and in a way to create favorable opinion. The very fact that a new meter was coming out by means of which the consumer could at last maintain strict supervision over his important electrical installation, whereby he could measure his current accurately and check his costs, and by means of which he could himself run current-consumption tests on his lighting and all his major appliances, would lend itself to the most healthy form of publicity and promotion. The consumer would want this new device and be willing to pay something to get it.

By education and the ordinary publicity channels, the idea could be put across that here was a jointly used and jointly useful system which would settle all misunderstandings connected with the charges for current. In other words, the era would at last dawn in our industry when the customer might "read the scales", in reading, understand, and in understanding come to a more friendly and appreciative state of mind.

+ + + by Electra's Husband

Maybe!

I MAY be wrong about this but it seems to me that for the last few weeks there has been a lull in all the talk about lower power rates and what wonderful things might happen if the federal government should take a more intimate interest in our volts and amperes. I may be wrong but I don't think so.

What set me to thinking along these lines was the President's speech at Boulder Dam. Mounted on this magnificent monolith—protected by the sun-baked shoulders of Nevada and Arizona—surrounded by the greatest galaxy of yes-men ever assembled on our desert—with editorials on the anticipated speech already in type—with everyone expecting a scathing tirade about the perils of private ownership so narrowly averted by this accomplishment on the Colorado—with the stage all set for a "natural," the President said a nice little piece which ignored the predatory host almost completely.

When you think of what he said last year in Montana and again in Mississippi on occasions much less important than the completion of Boulder Dam, doesn't it make you wonder if F. D. R. has been watching the currents of public opinion and is profiting thereby? Maybe he was told that this venture on the Colorado, which may prove to be the most successful of its sort in history, was established on business principles with private interests taking their full share of the responsibility. Maybe he had looked over the Federal rate survey for California where most of our people pay more for gasoline taxes than they do for domestic electricity. Maybe he had been reading *Fortune's* survey which showed that throughout the country people of all classes—rich and poor, black and white, idle and employed—were concerned far more about taxes than they were about their electric bills.

Maybe he has had a few personal letters from stockholders in utility companies who wrote with such earnestness and simplicity that there could be no doubt about their being sincere and not inspired communications. Maybe he had read a few editorials in our Western newspapers.

Maybe—well, anyhow the Boulder Dam speech must have been a great disappointment to those vociferous gentlemen who were ready and waiting to shout "Amen" and then launch their own carefully prepared diatribes.

AS recently as June 5 of this year, Bone of Washington, addressing the Senate, said, "This will give you some idea of why the power companies are grimly determined that there shall be no slashing of their ungodly and unholy rates, which in themselves constitute a damning indictment of the business which imposes such an outrageous tax on the home owners of the country."

Imagine the feelings of those ardent defenders of the Home and Fireside to be all stoked up with words like "ungodly" and "unholy" and "damning" and "outrageous" ready to emit as soon as the President gave the cue—and then to have him walk off the stage and leave them flat! It would be like having somebody slap you on the back while you had a mouthful of partially masticated popcorn. What's the use of building a dam 752 feet high—the greatest single structure ever to be erected by man—consuming enough cement to build a road 20 feet wide and extending a considerable distance (the exact length depending somewhat on the mixture)—transforming a large area of geography and permanently changing the climate of a great region—converting the silvery Colorado into an emerald set in carnelian—what's the use of doing all these things if you can't make speeches about them?

Of course, there was some mention about a yardstick but, by this time, the audience was beginning to drift back to where the cars were parked, wondering when they'd get out of this gosh-awful hole.

SEVERAL weeks have elapsed since Congress adjourned. Some twenty representatives from California presumably are home but they're not doing much talking. I expected the man from my district to be down our way before now, making speeches. But I haven't seen him. If he's around he's just listening. Do you suppose that was what the President was doing? Just talking and listening at the same time—or maybe giving short talks between long listens.

It must be discouraging to spend months working up a gang of statesmen to a fever heat and then send them forth to warn the country about the Power Trust only to have your audience listen politely and then ask, "What's this I hear about putting a tax on potatoes?" or, in a lighter vein, "Why not ask the preachers about it?"

That letter to the preachers was the funniest episode of the New Deal since the Brooklyn lawyer argued the sick chicken case "with gestures." Who could anticipate that the worthy clerics would not respond to the spiritual appeal of the New Deal? Who would have thought that these men, essentially emotional, could be so practical in their appraisal of the New Order? How would you feel if you asked a preacher to say something nice about your social security program and he retaliated by writing a three-page letter about the return of the saloon? The results were about the same as one might expect if the Edison Electric Institute had written Norris requesting his candid opinion on the virtues of private utility management.

I wonder what was written by those ministers whose missions and hospitals and seminaries and little colleges have their endowments largely invested in utilities and industrials? Maybe one or two of those letters were perused during the preparation of the Boulder Dam speech.

On second thought, all of my ideas may be wrong. Possibly this is only a part of the breathing spell.

Letters...

More Substitutes For "Convenience Outlet"

To the Editor:

Sir—A "Suffering Copy Writer" laments the fact, in your August, 1935, issue, that the phrase, "Convenience Outlet" is ugly and unwieldy. He asks in the name of the patron saint of the electrical industry that someone coin a term that will keep himself and others of his calling from exploding or quietly suffocating in impotent wrath.

I have a copy of the August issue at present and though I may be a little late to preserve his sanity, I wish to submit a term that may "fill the bill" and be the means of preventing wholesale suicide among the copy-writing fraternity.

In the name of brevity and easier "mouthing," why not call a "Convenience Outlet" an "ELECTAP"? (With apologies to the magazine, "TIME").

The copy writer might say, "For the More Abundant Life, an ELECTAP in every wall". (And so, far into the night).

Regarding the Editor's note, you may send me the prize—or something, unless someone else already has it.

HERMAN W. SCHILLING.

Berwyn, Ill.

Engineering Symposium + + +

[A monthly forum in which engineers will present and discuss their problems, this department is dedicated to advancing the art of power generation, transmission, distribution and utilization]

Rural Electrification

To Determine the Extent to Which Additional Farm Electrification is a Problem in the West, an Analysis Has Been Made of Present Conditions and Future Trends as Viewed by Various Operating Companies. Here is Summary of Contemporary Thought on the Subject.

SINCE rural electrification has been elevated to the inner circle of alphabetical agencies of the Federal government, it has received a proportionately larger share of the attention of both the layman and the engineer. The federal government backed its play for new rural lines with a $100,000,000 ante, very properly based on the fact that statistics reveal that nationally only 11.8 per cent of the farms of the United States enjoy the benefits of central station power supply. Hence, the prospective expansion in electrifying additional farms looms great both as a works relief measure and a public improvement. However attractive this virgin rural territory, but 12 per cent saturated, may appear, the ability of this huge number of new farm customers to use (and pay for) electrical service would make a very interesting study because economics still dictate expansion policies.

In endeavoring to maintain an economic balance between the costs of service and the revenue from rural lines, engineers have given distribution costs close scrutiny. Nowhere have their efforts been more successful in advancing the growth of rural electrification than in the eleven Western states. Of the 743,954 farms in the United States now using central station service 186,868 or 25 per cent are in the eleven Western states, a territory which contains but 8 per cent of the total farms in the country. From the accompanying tabulation of electrified farms in the eleven Western states it will be seen that Washington, Oregon and California have a total of 53.1 per cent of their farms already electrified and that this high percentage also prevails in the mountain states whose fertility permits diversification of crops. The more arid states show a correspondingly lower percentage because of larger farms inherent to grazing and dry farming districts.

The Western farm load, in areas where irrigation pumping is not necessary, is between 1,200 and 1,800 kw.-hr. per farm customer annually. Irrigation in Arizona and California raises this figure to an average of between 12,000 and 15,000 kw.-hr. annually, California's pumping load contributing a major percentage of the 9,140 kw.-hr. annual consumption which is the average per consumer for the Pacific area. The importance of the agriculture load in the 11 Western states is evidenced by the fact that the consumption of rural customers for 1934 was almost 1,400,000 kw.-hr. or approximately 11 per cent of the total energy sold to consumers in the area.

This high degree of electrification in the eleven Western states includes practically all of the cream and a goodly portion of the skimmed milk of the agricultural load. Those farms which now remain unconnected to the utilities' lines are on the fringe of more densely populated farming areas and are widely scattered. Under present economic conditions this marginal territory cannot be served economically with standards of service demanded by the wide variety of equipment normally utilized on the farm. In the West, therefore, the problem of increased rural electrification logically assumes the aspect of encouraging greater use from existing customers rather than marginal extensions into the very sparsely populated "fringe" areas. However, the desire to render a more all-inclusive service in the territory they serve plus the pressur of public opinion generated by propaganda on rural electrification from government bureaus makes it necessary to give consideration to the design of low-cost rural extensions in this territory. It can be safely assumed that the development of the rural electrification program in this territory will differ markedly from that elsewhere in the country in that most of the new rural customers connected to the lines of the utilities will be obtained by pushing existing extensions still further into the "fringe" areas. Surveys show that there is no reasonably well populated farming community now without central station service.

Distribution engineers in the West have long realized that greater rural electrification depends largely upon reducing the cost of rural distribution lines. Up to the present time investments in lines and services of between $1,500 and $2,000 have been practical because the customers per mile and the potential revenue were large enough to justify the fixed and operating charges of such lines. Such lines were economical with as low as five to seven customers per mile. Even this low number of connected customers can seldom be met with most of the future extensions which will be made in Western farming areas. Therefore, the economy of such extensions depends upon the ability of engineers to devise lines with a corresponding lower investment cost. Contemporary thought along these lines is indicated in the following remarks by engineering and operating executives of various utilities operating in the Western territory.

Company No. 1 builds its rural lines of 35-ft. cedar poles spaced approximately 250 ft. apart. The top crossarm on these poles carries one single-phase, 2,300-volt primary circuit of No. 6 hard-drawn bare copper wire. The secondaries are carried on racks below the crossarm and consist of No. 4, weatherproof wire. Services are two No. 8's for lighting and three No. 6's for ranges or small motors. Secondaries are grounded by means of rods driven in the ground on poles next to the transformers which are hung on crossarms at right angles to the line arms. The only method this company has used to reduce the investment in rural lines was to increase the spacing

from the normal of 125 ft. to 250 ft. and to substitute bare hard-drawn wire for the usual weatherproof wire on the primary circuits. This company reports that lines of this character cost approximately $1,000 per mile exclusive of transformers and services. They average ten connected customers per mile.

Company No. 2 which operates in an extensive rural area of comparatively low population density reports that the characteristics of its territory have demanded as inexpensive lines as the service would permit. It has been unable therefore to radically reduce the cost of lines in the present agitation for extending rural service. It is interesting to note that this company reports that the greater portion of the rural habitation within reasonable reach of its lines is now served and that many of those not served are in such financial positions as to make them unable to avail themselves of electric service at any cost.

The standard type of construction of this company consists of 35-ft. creosoted, butt-treated cedar poles, with fir crossarms, wooden pins, standard pin-type insulators and standard hardware. Ground guys are attached to channel anchors. Secondary crossarms are installed where secondary runs are required. Circuits are single phase or three phase according to requirements, the rural distribution circuits being mostly 6.9 or 11 kv. This company has standardized in so far as possible on No. 6 hard-drawn copper for branch lines, although a few branch lines with little prospect for additional load have been constructed with galvanized iron wire. Span lengths vary from a normal of 250 ft. upward to 350 ft. under favorable conditions, and savings in cost have been possible by the elimination of lightning arrestors at the customers' transformers and the use of meters of the outdoor type. This company has been considering the merits of the ridge-pin type of construction for single-phase, grounded neutral circuits where the phase wire is to be carried on the pole top pin and the neutral wire carried on an uninsulated bracket attached directly to the pole. In comparison with standard construction the material costs are slightly in favor of the crossarm type and the estimated labor costs are about the same. Although this type of construction is receiving considerable attention at the present time this company has not been able to prove any marked economy in their estimates. It has not installed any lines of this design, although the new construction has been specified on certain lines upon which negotiations are pending. This company also is considering the use of high strength conductors with longer spans as a possibility of reduction in costs and this design also is proposed for certain prospective lines. Because of the territory served, construction costs vary so widely that they are of little value for comparative purposes. However, the costs do show that the 35 to 45 per cent of the total expense on rural line extension is for customer service facilities, that is, transformers, services and meters. Any reduction in the cost of this equipment, therefore, will have a considerable effect on the cost per customer and further study of this problem is under way. This company suggests that the cost of wiring buildings on the farm also should be given considerable study because many prospective customers within the reach of the services of this company find it impossible to incur the wiring expense.

Table I—Western Farm Electrification Statistics

State	No. of Farms 1930	Farms Served Dec. 31, 1934	Per Cent Farms Served	Annual kw.-hr. per Farm
Washington	70,904	40,060	56.5	1,848
Oregon	55,153	17,839	32.3	1,448
California	135,676	81,093	59.8	14,470
Montana	47,495	2,768	5.8	1,236
Idaho	41,674	13,433	32.2	1,484
Wyoming	16,011	527	3.3	1,150
Colorado	59,956	7,145	11.9	798
New Mexico	31,404	1,350	4.3	1,481
Arizona	14,173	5,577	39.3	12,777
Utah	27,159	16,130	59.4	897
Nevada	3,442	946	27.5	1,707
Total 11 Western States	503,047	186,868	37.18	
Total United States	6,288,648	713,558	11.8	

Figures from Statistical Department, Edison Electric Institute.

Company No. 3.—This company uses 35-ft. poles with normal spannings of 250 ft. for rural extensions which are generally made at 4 kv. Where it is not expected that three-phase service will be needed in the future, four-pin are used. No. 4 hard-drawn, bare wire is used along public roads and No. 6 wire on the short branch lines. Joint pole construction with the telephone company has been the practice where it is an advantage to both companies.

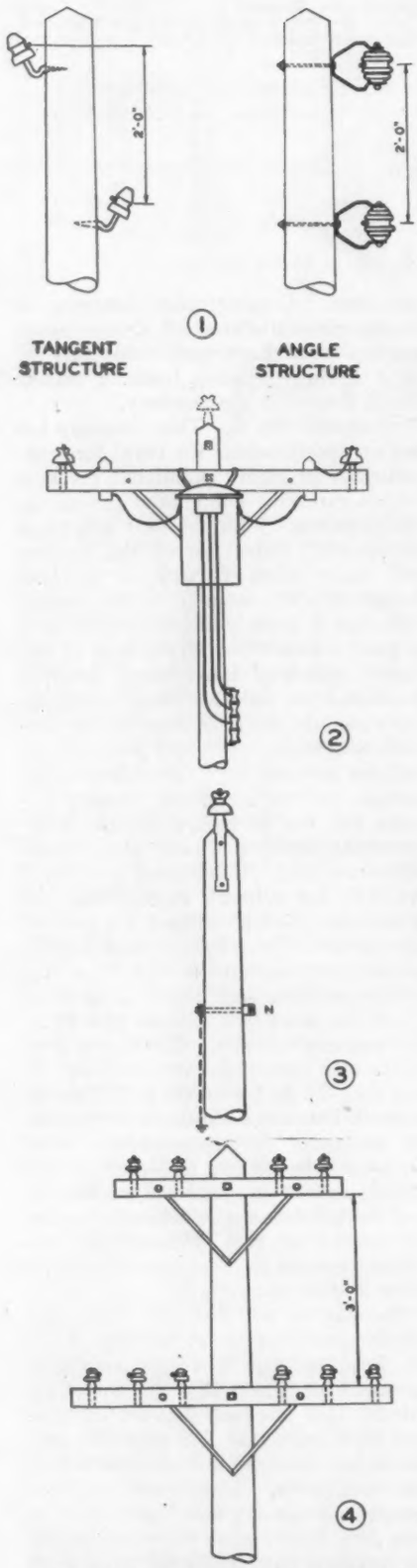
The present construction methods and conditions availing in this territory permit these rural lines including conductors, anchors, etc. to be constructed for a cost from $1,150 to $1,250 per mile where four to eight customers are to be served in that distance. Transformer service and meters cost from $60 to $65 per customer where there are from four to eight customers per mile. These figures are based on cost estimates of typical extensions rather than average costs over a large number of extensions.

The company has not developed any experimental design for lines of low construction costs primarily because the new areas to be opened up are confined largely to mountainous or wooded areas where the use of long pole spans or shorter poles is not possible due to crooked roads and tree conditions which limit possible span lengths and have much to do with the cost of construction. Consideration, however, is being given the use of larger spans made with high strength conductors for taps serving pumping loads or remote ranch houses in the territory.

Company No. 4. This company has set up specifications for rural line construction in thinly populated areas in which extensive community growth or development within the next few years is remote. Poles are of the western red cedar class C with a standard length of 35 ft. set 6 ft. in the ground. All class C cedar poles are treated with a paste preservative at the time of setting. Standard low-voltage, four-pin crossarms are used for the primary circuits and six-pin crossarms for the secondary circuits. Standard porcelain insulators are used for 6,600-vole primary circuits and for 2,300-volt primary circuits and for secondary circuits deep-grooved, double-petticoat glass insulators are used. Conductors are No. 4 A.C.S.R. for primary circuits and No. 4 hard-drawn, bare copper for secondary circuits. The standard span lengths of this construction are 450 ft. with a minimum clearance above ground of 18 ft. for secondary circuits and 21 ft. for primary circuits. Clearances over roads and state highways shall not be less than 28 ft. for 6,600 or 2,300-volt circuits. Primary conductors are spaced 60 in. apart as are secondary wires for a two-wire circuit, the specifications calling for 24 in. between the neutral and the one-phase wire when three-wire secondaries are run. Primary and secondary crossarms are spaced a minimum of 3 ft. apart.

The sag in feet for 250-, 350- and 450-ft span lengths at 60 deg. F. is 1.5, 2.25, and 6.12 ft. respectively with intermediate figures of a corresponding value. This company has set up general rules governing line extension estimates for rural farm lines and suburban territories. Line costs are estimated on a cost per foot basis which in turn is a function of the span length, the standard span length for rural lines being 450 ft. and suburban lines 300 ft. In the following tabulation all overhead charges are included in the items and a summation of the items includes a complete estimate of the costs of the line.

This company found the use of spe-



These sketches show the trends in rural line construction. 1—single phase line without crossarms; 2—single or 3-phase primary with secondary rack; 3—single phase primary construction served from 4-wire source, using ridge pin construction and grounded neutral; 4—conventional construction

cial trucks with earth boring and pole raising equipment offered economies of installation. The use of smaller and cheaper poles with the Anaconda preservative together with long spans and high-strength wire were the principal contributions to low cost This company has made estimates of underground types of construction and of extra span lengths with catenary supports but none of these have given sufficient indication of net economy to warrant an experimental installation. This company also suggests that single-bushing transformers and other service equipment, if standardized, might permit effective reductions in material costs of services.

Company No. 5. The report of this Eastern company is included in this symposium because, contrary to the experience of Western companies, it has experimented with a long span single-phase rural line design which is built for approximately $800 a mile including engineering, superintendence, insurance and other overhead charges but excluding meters, transformers and services. This type of construction consists of 30- or 35-ft. poles using span lengths of approximately 250 ft. No crossarms are used, the conductors being supported by bracket-type insulators with 24 in. vertical spacing, the two conductors being on either side of the pole in normal runs. Where transformers are installed they are mounted on a crossarm at right angles to the line with secondary wires being carried on the conventional rack mounted on the pole.

Company No. 6. This company's rural line design is of interest because it is successfully using 600-ft. spans on 30-ft. poles. Standard 8-ft. crossarms with four pins are used, the pole pins being used for single-phase extensions of 6,900 volts phase to neutral and, later on, if more capacity is needed the two additional wires for three-phase service are added on the outer pins. Line conductor consists of three strands of No. 10 extra high-strength copperweld. The clearance problem of the long span with 30-ft poles where secondary conductors are necessary is solved by the use of intermediate poles. Another feature is the use of three-strand, No. 8, high-strength, 30 per cent conductivity conductor for guying. By using the guy as the grounded neutral for the secondary it is possible to make it carry part of the weight of the other one or two secondary conductors. With this construction suspension racks are used at intermediate points on the span, this practice not only serving to act as spreaders but also permits the tapping off services to the customer's premises along the span. It is estimated a saving of approximately 20 per cent over conventional construction is obtained with this design.

Company No. 7. This company uses a type of construction similar to that described by Mr. W. R. Bullard, of Electric Bond & Share Co., at the meeting of the Empire State Gas & Electric Assn. held in Schenectady March, 1935. These lines are of the single-phase type

Table II—Estimating Costs for Rural Lines

A—Distribution Poles, Primary Wires and Fixtures, Exclusive of Guys:

Average Span Length in Feet	Cost per Foot
150 to 250	13.5 cents
250 to 350	12.0 cents
350 to 450	10.0 cents

B—Distribution Poles, Secondary Wires and Fixtures, Exclusive of Guys (to be used on that portion of the extension not requiring a primary line):

Average Span Length in Feet	Cost per Foot
150 to 250	14.5 cents (2-wire secondary), 16.5 cents (3-wire secondary)
250 to 350	13.0 cents (2-wire secondary), 15.0 cents (3-wire secondary)
350 to 450	11.0 cents (2-wire secondary), 13.0 cents (3-wire secondary)

C—Primary or Secondary Wires and Fixtures on Existing Poles, All Areas and Span Lengths:

Size of Wire	Cost per Foot of 2-Wire Circuit	Cost per Foot of 3-Wire Circuit
No. 4 ACSR or No. 6 Cu., bare	6.0 cents	7.5 cents
No. 4 Cu., bare	6.75 "	9.0 "
No. 4 Cu. W.P.	7.5 "	10.0 "

D—Service Wires and Fixtures, All Areas (customer to be charged separately for excess service more than 150 ft. from the side of road nearest customer):

Size of Wire	Cost per Foot of 2-Wire Circuit	Cost per Foot of 3-Wire Circuit
No. 8 W.P. Cu.	5.5 cents	
No. 4 W.P. Cu.	7.5 "	10.0 cents*

*Customer to be charged only for 2 wires, or 7.5 cents per foot.

E—Service Poles (required where service exceeds 175 ft. in length):
Cost of each service pole, when installed by company.....$11.00

F—Guys:
Guys, including either guy poles or patent anchors or both are required at end of extension and in turning corners and curves.
Estimated cost of each guy installed.....$13.00

G—Meters:

Ampere Rating	Installed Cost 100 V.	200 V.	400 V.
5	$ 9.40	$ 9.40	$11.80
10	10.00	10.90	11.80
15	11.80	11.80	14.20

H—Transformers:

Size	Cost Installed, Including Cutouts and Grounds 2300 V. Single Phase	2300 V. Three Phase	6600 V. Single Phase	6600 V. Three Phase
1.5 kva	$44.00	.....	.....	.....
3.0 "	58.00	.....	93.00	.....
5.0 "	76.00	.....	111.00	.....
7.5 "	96.00	.....	133.00	.....
10.0 "	115.00	170.00	155.00	234.00
15.0 "	144.00	211.00	191.00	282.00
22.5 "	.....	267.00	.....	350.00
25.0 "	213.00	282.00	264.00	370.00

with one wire grounded and the other operating at 7,620 volts, the Y voltage of 13.2-kv. circuit. The phase conductor is carried on a ridge pin insulator and the ground conductor tapped directly to the pole without insulation. By using steel reinforced copper or aluminum conductors it is possible to obtain span lengths varying from 350 to 600 ft. for heavy, medium and light loading districts, using 30- or 35-ft. poles.

No cost data is available on this type of construction at present, although it is anticipated that costs will be within $1,000 per mile including services.

Company No. 8:

Illustrative is a rural extension that was originally estimated to be built according to standard practice, both as to materials and clearances, then re-estimated to meet with the so-called substandard practice.

Last July a 6-mile, single-phase, 11-kv. extension was estimated according to standard practice, to serve 33 rural consumers. The minimum height of poles to be 35 ft. with 40 and 45-ft. poles to support transformers and maintain the required clearances and the spans to average 250 ft. It was decided to use No. 4 bare copper for primary conductors. Approximately 5,000 ft. of secondary was figured, 75 per cent of which would be three No. 2 bare copper, the balance of smaller copper. The total cost, including an item of $900 for the survey and acquisition of rights-of-way, was $12,846 or $2,141 per mile, exclusive of transformers and services.

Early this month the estimate was revised to construct a substandard line with 18 ft. minimum primary clearance to ground and 15 ft. minimum secondary clearance. These clearances permit the use of 30-ft. poles, set 5 ft. in the ground. The crossarms are to be 1 ft. below the top of the pole. If it is found necessary, in the future, to supply three-phase energy over this line, a king pin may be used to support the additional conductor. The spans were lengthened to average 300 ft. and two No. 4 A.C.S.R. was substituted for the No. 4 copper originally estimated. This conductor will be of ample size for the load to be served.

The estimated cost of this line is $7,706 exclusive of transformers and services, a saving of $5,140 or 40 per cent of the original estimate. The cost per mile is $1,280 including overhead and supervision. Comparative costs are shown below.

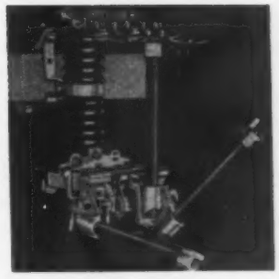
A better comparison would be a 5-mile extension with no secondary circuits or rights-of-way involved that was estimated first for standard construction, then re-estimated for substandard construction:

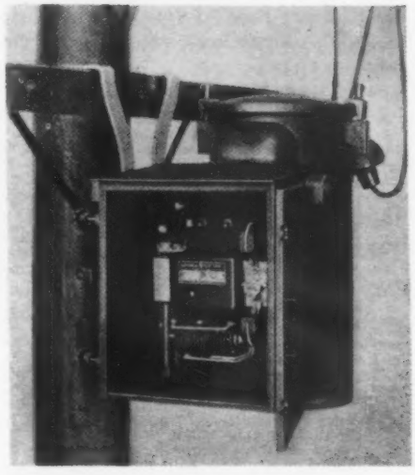
Cost per mile of standard line, $1,722.40, as against $969.80. These estimated costs are for primary line only, costs of guys for secondaries, transformer grounds, etc., omitted.

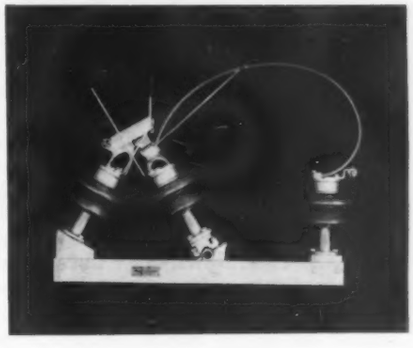
A point of interest in estimating this job was that the difference in cost per mile of No. 4 aluminum at $0.17 per lb. and No. 6 copper at $0.12 per lb. was $1. The new rural type distribution transformers were not considered, chiefly due to the fact that our requirements exceeded the 3-kva. maximum size now manufactured. The line will traverse an open country and should

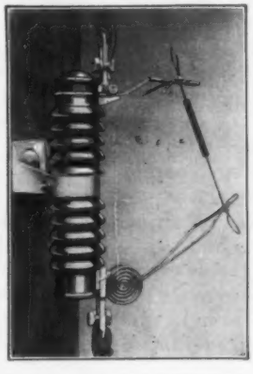
Item	Standard	Substandard	Saving
Poles and fixtures	$ 7,822	$4,336	$3,486
Wires and insulators	3,752	2,940	812
Tree trimming	360	423	—63
Rights-of-way	900	..	900
Incidentals	12	7	5
Total	$12,846	$7,706	$5,140

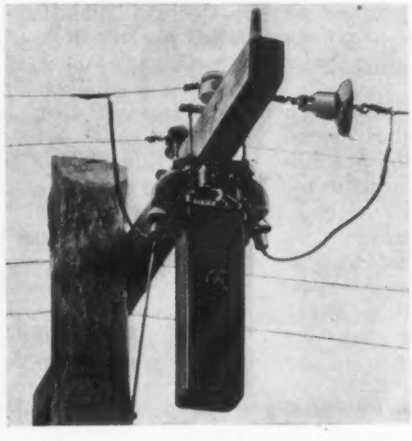
Item	Standard	Substandard	Saving	Per Cent
Poles and Fixtures	$5,612	$2,762	$2,850	51
Wires and insulators	2,628	1,656	972	37
Tree trimming	360	424	—64	—18
Incidentals	12	7	5	41
Total	$8,612	$4,849	$3,763	44











Rural Line Equipment

From top to bottom—Kearney repeating fuse; G. E. step-type voltage booster; Delta-Star air break switch; Kuhlman rural-type transformer; G. E. single-phase reclosing breaker; and Kearney high voltage fuse. Other manufacturers also provide a complete line of low cost equipment for rural line extensions.

give service identical to that of lines built according to standard practice. As the territory served by this extension will be strictly rural and the highest individual connected load is 17.5 kw., with a possible maximum demand of 10 kw., regulation will not be a problem.

Company No. 9—This company submits the following data on its rural line construction. It will be noted that the cost per mile of line is very close to $1,000, including customer services:

6,600-Volt Lines

1. Delta connection—separate neutral.
2. Lightning arresters—not used.
3. Grounds—located at each transformer.
4. Regulation—pole top regulators, and substation regulators are used on individual lines as required. In some substations, bus regulation only is used. Regulation plus or minus five per cent.
5. Maximum spans—400 ft.
6. Conductor—No. 4 A. C. S. R.
7. Poles—35-ft., class B(red cedar poles treated for 30 in. at ground line with Anaconda paste.
8. Transformers—standard distribution type transformers are used with minimum size of 1½ kva.
9. Cost—cost of line only (single-phase) is $570.00 per mile. With 8 customers and 7½ kva. transformer capacity per mile, the complete cost of line, secondaries, services, meters, etc., is $1,050.00 per mile.

2,400-Volt Lines

The above applies to 2,400-volt rural lines with the following exceptions:

5. Maximum spans—300 ft.
6. Conductor—No. 6 copper.
9. Cost per mile—line only $650, complete, including customers' meters (8 per mile) $1,050.00. (The increased cost of line is offset by lower cost of transformers so that the total cost on an 8-customer per mile basis is the same in each case.)

Trends in Low Cost Lines

The investment necessary to serve rural customers falls into two classes, namely, the line itself including poles, conductors, insulators, etc. and the customer service equipment including transformers, meters, service wires and switches. With reference to lowering the cost of rural distribution lines there is a growing trend toward taking advantage of the use of high-strength conductors for longer spans. Where it is possible to utilize longer spans there is an obvious saving in the number of poles and also in installation cost, particularly where difficult terrain makes pole setting expensive. While certain companies have experimented with fabricated frame structures, the conventional pole and crossarm construction has not yet been displaced to any great extent in Western systems. Neither have there been many installations using poles under 30 ft.

The use of the ridge pin construction has not yet become particularly popular in the West, although the possibilities of using the ridge pin insulator for the phase wire together with an uninsulated bare grounded conductor for single-phase extensions appears to offer the possibility of some saving. Inasmuch as new extensions will probably pick up but relatively few customers per mile, the problem of carrying secondaries along the line to make one transformer serve one or more consumers is not particularly important in the West, although where such practice is necessary the use of a common neutral would eliminate one wire and with a corresponding reduction in cost. As reported in the foregoing, one company found it economical to use class C poles with preservative treatment instead of a better grade of poles. Practically all companies are unanimous in agreeing that good construction with reasonable factors of safety and adequate clearance is the best and most economical investment in the long run.

Little has been said regarding labor costs which are an appreciable portion of the investment cost in new lines. Earth boring and pole raising equipment has been shown to be very economical where an appreciable section of line is being constructed. However, if short, widely scattered rural extensions are to be the rule rather than the exception in the future it is doubtful whether or not the investment in special tools of this type for various districts would be justified. It is suggested that this subject might be a worth-while study by engineering bodies of the industry. While there has been a great deal of discussion about buried cable as a means of lowering rural distribution costs, cost estimates on such a system do not show marked economy and one such experimental installation made in the fall of 1931 cost almost $2,000 per mile including transformers, services and meters. This was a 4,000-volt, single-phase installation using No. 6 concentric cable with eight transformers installed for customer services. The Ontario Hydro-Electric Power Commission also has used buried cable to supply certain rural territories and has found that the investment was approximately the same for the corresponding overhead line of standard construction.

Recent developments by the manufacturers of small pole-type regulating equipment profoundly affect consideration of rural line design. Whereas the long distances generally involved in rural distribution have, in the past, tended toward the use of higher voltages such as 6,900 or 13,200, the development of small boosters and automatic regulators will permit the extension of 2,400 and 4,000 lines much greater distances and still permit rendering satisfactory service to the customers at the far end. The latter circuits are at the voltages which permit the lowest over-all costs of service per customer, the higher voltages requiring an expense for equipment and additional insulation of the line itself greater in proportion than the economies derived therefrom. Correspondingly, the use of pole type regulating equipment for voltages of 13 kv. and above will permit the greater extension of such lines and will require less transmission substation equipment for their supply.

What of R.E.A.?

Much has been written about the Rural Electrification Administration and its $100,000,000 purse. The policies for administering this fund are as follows. The money will be handled through loans to responsible organizations but no grants of money will be made. The projects must be self-liquidating and built in virgin territory, that is, territory not now served by existing power organizations. The work is to be done by relief labor. Each line need not be self-amortizing but the entire project must be, the amortization period being set at 20 years. A minimum of three customers per mile will be necessary and each customer is expected to use at least 1,200 kw.-hr. per year. No state units are to be set up although there may be state advisory groups.

How many communities in the eleven Western states can meet all of the above mentioned requirements? Few, if any areas can comply because such areas already have become a part of the vast rural distribution system of the Western utilities. It, therefore, can be assumed that R.E.A. as an organization will have little effect in financing new rural extensions in the West.

Future extensions in this territory will depend upon (1) the development of present unserved areas to a point where potential revenue justifies extensions; (2) improved farm income in marginal areas which will make existing prospective farms financially able not only to afford electricity but also to make the necessary investment in utilization equipment and wiring installations on the farm; (3) additional reduction in line investments due to more economical designs suited to low potential revenue characteristic of more widely scattered customers in more or less remote rural districts; (4) the development of low cost stub circuits, either primary or secondary, to pick up but one or two customers located at some distance from existing services; (5) any new developments by the manufacturers in building low cost service equipment less expensive appliances and apparatus for the farm, or simplified wiring installation which in turn lower the overall investment for the utility and the farmer. Realization of any or all of these factors will accelerate rural eectrification in the West and there is every indication that the engineering attention that is being focused on the problem at present will be productive of new developments tending toward this end.

Maintenance Practice—II

Oil Circuit Breakers

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OWING to the many sizes of oil circuit breakers, this article deals with maintenance in a general way covering all designs.

1.—When and what should be the determining factor as to the necessity for inspection and repairs? A record should be kept showing the number of mechanical operations, normally without short circuit, and the number of operations on short circuit. One operation on short circuit should be counted as from 25 to 50 normal operations depending on the severity of the short. A total of approximately 125 normal operations is generally the time for an inspection. The interrupting capacity of the breaker and the kva. of the station or system back of the breaker also must be given consideration in determining this feature.

2.—Oil should be tested semi-annually especially in breakers of 22-kv. and up, even though the 125th normal operation has not been reached. If the oil is carbonized greatly it should be filtered. If it breaks down at 20 kv. or less with the standard 0.10-in. gap, it should be filtered.

3.—All bushings should be thoroughly wiped clean at least once a year just before the fall rains and more often if near a dusty surrounding.

4.—Solenoid operated breakers should be checked for speed in closing and opening to see that none of the clevis' or bearings are binding or lost motion exists. All bearing surfaces should have a few drops of penetrating oil mixed with powdered graphite. This in a short time leaves a dry lubricant of graphite and also prevents rust. A product of this nature can be purchased on the market. The closing coil plungers should be wiped clean, and a dose of the above graphite preparation rubbed on the surface of the core, which prevents dust from collecting on the surface.

Air cushion valves should be checked to see that the ball is seating and the air opening is free. Auxiliary relays should be inspected, contacts dressed up, arc chutes replaced if found burned or broken.

The solenoid housing should have two breathers, one at the top and one at the bottom. These breathers should be made of 1-in. steel "ells," galvanized, and copper screen over the openings to prevent the entrance of bugs and mice. The housing should be dusted out and kept free from cobwebs and spiders.

5.—Large high voltage breakers of the quick-break type with butt contacts should be very carefully tested for breaking travel. This is very essential for good relay action, for, if one phase opens its contacts in five cycles and the other in seven cycles and the third in ten cycles, there is apt to be an unbalance of sufficient amount to operate some other switch which has balanced relay protection.

6.—The switches of the explosion chamber type are found to hold their adjustment more closely, but they should be checked also for burned contacts, burned chamber liners, throats and bayonets. Check the oil level in the bushings, oil leaks around flanges; also on compound filled bushings note if there is any leaking of compound generally found around the upper caps or tank flanges where gaskets are used.

If compound is leaking care should be taken in making such repairs. The cap screws around the flanges and caps should not be tightened unless on a very hot day in order that the compound be real soft so that the rain shield can be drawn down without breaking the porcelain at the cast ring. It is advised that a drawing of the bushing be procured from the manufacturer or his advice given before an attempt is made to repair leaks.

The prefilled arc shields on the lower end of switch bushings should always be checked for oil level at the time the oil is being filtered and tanks cleaned; if found wanting, new clean oil of high test should be used to fill them to their proper level.

Copper contacts should be cleaned up with fine sand paper, this should be done carefully in order to have an even bearing between the sandpaper and contact surface so as to prevent rounding the surface. The contacts on switches of the heavy current and of the lower voltage class, should be examined for contact pressure.

7.—Contacts of copper that are seldom opened are very apt to oxidize, and copper oxide is not a conductor, therefore it is good practice to open and close the breaker several times every six months in order to wear in a bright surface. In every case where possible, the contacts should be sanded or ground in even though they are not burned. Bolted surfaces of the fingers, etc., also oxidize. These surfaces can either be silver-plated, nickle-plated or tinned to prevent oxidation. Tanks should be cleaned, tank liners or partitions renewed if found broken or burned.

8.—Examine the bushings of the lower voltage type for fractures. Often they are found broken where they go through the top. Due to the copper stud running through the bushings with the nuts on each end preventing the bushing from coming apart, a close inspection is required to detect any fractures. The upper-end lead connections should be taped or covered with insulating tubes to prevent rats from causing short circuit by crawling in between terminals.

Switch toggle levers should be inspected for broken cotter pins, loose clevis pins, and trip coil plungers binding, etc. The penetrating oil preparatoin should be used on all moving parts except where the graphite may come in contact with coils, switch oil or contacts.

9.—Motor operated breakers should have the motor operated by hand control button and then by automatic or recloser, checking and oiling all moving parts. Inspect the contacts on the timer and check the auxiliary pallet switches for loose connections and connecting lever.

Some of the most common faults are worn worm gears, pawls and rings. The oil in the gear box should be checked. The contact shoes between tanks on the H type breakers very often become set so that the leaf springs do not have the curvature that is needed for proper contact pressure. These should be taken apart and each piece of spring copper reset and clamped up so that they would have the pressure of a new contact. The rod contacts burn as they leave the socket in the bottom of the oil tank. The adjustment of these rods should be checked so that they break at the proper distance after the main contacts leave their seats, but that the rods should not bottom in the contact retainer when the switch is closed. The wood lifting rods should be checked for fractures and splits. The H type breakers should be filled with a heavy switch oil; the grade of oil for all other switches should be the same as used in transformers.

When the oil is found carbonized in the H type breakers, the baffles and linings should be taken out and the tanks and insulation thoroughly cleaned. Examine the guide bushings for cracks, also check the oil retainer in the bushing to see that the contact rod slides through the retainer with sufficient sealing effect to prevent oil from gushing past the rod at an opening of the breaker.

Goodwill Building + + +

[*"With public sentiment nothing can fail; without it nothing can succeed; consequently he who moulds public sentiment goes deeper than he who enacts statutes or pronounces decisions."—Lincoln.*]

Dollars for Ideas to Help Public Relations

OVER seven hundred men and women in the industry, impressed by the importance of public goodwill, submitted answers to the question, "What are the most effective methods of increasing customer goodwill?" in the contest conducted early this year by the Pacific Coast Electrical Association. Because winning and holding public goodwill is perhaps the industry's foremost problem today, ELECTRICAL WEST will devote its pages to an open forum for suggestions from anyone and everyone in the industry who may have ideas that can be applied to this problem.

Success of this new undertaking appears assured in the light of the response brought about by the recently concluded "Business Building Brainstorm" contest which elicited hundreds of suggestions on how load might be built. ELECTRICAL WEST's Board of Consulting Editors has agreed with the staff that much good can result from a forum of this type.

Rules similar to those which applied in the case of Business Building Brainstorms will apply. ELECTRICAL WEST will pay $2.50 for each idea or suggestion deemed worthy of publication. In addition all suggestions received during the period from November 1, 1935 to October 1, 1936, will be eligible for $50 in awards to be given by ELECTRICAL WEST, the P.C.E.A. and the Northwest Electric Light & Power Assn. These awards will be based upon the goodwill building merit of the idea, its practicability, adaptability and originality. The judges will be officers of the two associations and the editors. The awards will be $25, $15 and $10 for the three suggestions ranked first, second and third by the judges. In the case of ties duplicate awards will be made.

Suggestions should be limited to 400 words, preferably less. Composition does not matter as manuscripts will be edited for publication by the editors. Ideas will be published over a nom de plume, provided the author indicates that such is his or her wish. They should be sent to the editor.

The samples which follow have been taken from some of the papers submitted in the P.C.E.A. contest this year. They indicate the type of suggestion to be considered.

•

Meter Tester Can Avoid Arousing Bad Feeling

When leaving a meter that has just been tested for an inquisitive customer, the employee frequently leaves the impression that things are not just what they should be on account of company rules which forbid his going into detail as to whether the meter is fast or slow.

By being tactful and explaining that the test record must be turned over to a superior for computation and checking before arriving at the final test result, the meter tester can show his interest and that of the company in the customer's problem without leaving the impression that "the rules" won't let him tell the customer anything about the test. He can say that as soon as the figures are checked the customer will be notified of the results.

•

Philosophy of Service

"THE conduct of the employee in contacting with consumers carries with it a responsibility as great as any officer of the company, because in the aggregate, results of millions of contacts reflect in the minds of the consumers — the company. Thus, the character of the company is largely moulded through these millions of daily transactions with our consumers—over the counter, over the telephone, and in the field. If the major part of these contacts is bad, then the character of the company is bad in the minds of our customers. If the major part of these contacts is good, then, and only then, is the character of the company reflected favorably with them.

"Each negative contact blots out all the good derived from many favorable ones. Decide today to make every contact a positive one for your company. Maintain an attitude of interest. Try to look at each complaint from the consumer's viewpoint. Nothing is gained for your company by winning an argument. In most such cases, you have hurt someone internally and he leaves with a feeling of revenge and distrust. Every unfavorable reaction is a reflection on your ability to properly handle your company's business.

"Yours is a human problem which requires patience, tactfulness and judgment, remembering always that in the eyes of the consumer, and as a member of this organization, you are the company.

"Be tolerant — be helpful — be friendly." — R. E. Fisher, Vice-President in Charge of Public Relations and Sales, Pacific Gas and Electric Co., in a statement to all employees of that organization.

Irritated Customers Need Individual Treatment

Employees often come in contact with many types of customers that are particularly difficult. We should be intelligent enough to recognize such types and be flexible enough in our attitude to meet them considerately. Here are some general types with suggested methods for dealing with them:

The irritable customer, who may be either tired, nervous or chronically irritable. This type is contradictory and jumpy; he must be met with patience, a calm, low, soothing voice, acquiescence and deference.

The inconsiderate customer, who makes trouble, fumes, argues and misrepresents facts. He must be treated politely, patiently, firmly and without argument.

The deliberate customer, who is slow-thinking, slow-moving, indecisive. This type must be talked to slowly, clearly, taking up only one thing at a time.

The talkative customer, who babbles along without stopping, doesn't know what he started to say and tells the family history. He must be treated tolerantly, with self-control, but watchful of an opportunity to "get down to brass tacks" so that the conversation may be closed courteously.

The suspicious customer, who doubts the sincerity or accuracy of representations and is cynical of all claims. This type demands clear, detailed arguments on points, deference, unruffled temper and ignoring of aspersions.

The timid customer, who does not know his own mind and is indecisive and indefinite. This type desires to have facts presented confidently and clearly with his mind literally made up for him, with tact and understanding.

Knowledge of these types and the methods of handling them will build goodwill instead of create unpleasantness and unfriendliness.

Subordinates Reflect Attitude of Superiors

Too often a good man through a combination of ability and assistance of a superior climbs to a high position, and on arriving—lets down.

The gold desk, the influence and power he wields, lull him into thinking his desk cannot get along without him. He forgets that the real battle is out where he came from and he should maintain close contact therewith and with the units operating under him in those zones. Misunderstandings spring up, he does not know what his men are doing, and he depends on subordinates to handle things for him.

Doubts, distrusts, jealousies, and other human emotions build up a wall, and while he may have been a whiz on the ladder—on the top he is a flop. His organization is not functioning and the public they contact is reacting unfavorably.

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Treat Customers the Same As Stockholders

It is the practice of many companies to send messages signed by the president along with quarterly dividend checks to stockholders. These are often frank discussions of company problems with statements dealing with the company's progress and prospects.

If such messages are good for the stockholders, they should be equally effective with the customer. Although the discussion might not be as intimate as in the case of the stockholder, nevertheless the customer should react favorably toward a friendly message directed to him from the president of the company. Quarterly message might be too frequent, but the idea should work well once or twice a year.

•

"Roll Their Own" When Lights Fail

EMERGENCIES demonstrate whether there is such a thing as esprit de corps and loyalty in the utility industry. When a commercial agent and a lineman turn fireman and engineer and operate an obsolete steam plant for 23 hours to give the consumers electric service during an emergency period that is a real story.

According to the Pacific Power & Light Co.'s bulletin such an event actually happened during the latter part of August. When a forest fire in The Dalles-Hood River (Ore.) district interrupted the transmission line to Heppner, Ray Kinne, commercial agent, and L. G. Rasmussen, lineman, exercised ingenuity and applied lots of hard work to provide the citizens of Heppner with electrical service.

When the service was cut off these two versatile employees quickly decided it was time to go into the power manufacturing business. They betook themselves to the old Heppner steam generating plant and went to work with a coal shovel and an oil can. In a short time they had sufficient head of steam to operate the old reciprocating engine driven generator which was able to carry the city load during the entire outage while the transmission line was being rebuilt.

Over the 23-hour period the maximum demand of the plant was 105 kw. and the minimum 30 kw., the total output for the period being 1,380 kw.-hr.

This output required the shoveling of some 8½ tons of coal which is an average of about 1 kw.-hr. per 12 lb. of coal. As modern steam plans average a kilowatt-hour per 1½ lb. of coal, no new records for steam plant efficiency were established by the new crew but they did keep the wires hot in Heppner and in so doing established in the minds of the consumers that the Pacific Power & Light Co.'s slogan means exactly what it says, *"Always at your service."*

Brainstorm Winners

Winners of the prizes for Business Building Brainstorms during the past six months have been announced by the judging committee consisting of K. M. Robinson, President, Idaho Power Company and of the Northwest Electric Light & Power Association, Boise, Idaho; Berkeley Snow, Secretary of the same association, and George C. Tenney, editor of Electrical West.

The first prize of $25 goes to R. V. Pearson, Pacific Gas and Electric Co., San Francisco, for his suggestions for methods of stimulating additional lighting load (No. 50 Electrical West, October, 1935, p. 59).

Second prize of $15 was won by Vernon E. Leach, Southern California Edison Company, Rosemead, Calif., for his suggestion that floor warmers for markets should offer profit opportunities (No. 47, page 59, Electrical West, October, 1935). Mr. Leach submitted a large number of suggestions to the contest, several others winning honorable mention.

Third prize of $10 goes to W. A. Bouve, Southern California Edison Co., Vernon, Calif., for his suggestion that a clearing house be set up for industrial sales data. (No. 26, page 27, May, 1935, Electrical West).

Several other contributions won honorable mention from the judges, among them were other contributions from Vernon E. Leach and R. V. Pearson, as well as from J. E. Barrett, district manager, San Joaquin Light & Power Corp., Madera, who was second prize winner in the first contest. T. R. Myers, B. C. Electric Railway Company, Victoria, B. C., was also given honorable mention.

Fifty suggestions in all were received and published, each of which contains ideas of merit for building business and helping to destroy the power surplus pest. With this announcement the contest closes, but a new contest on ideas for improving public relations enters in its place.

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Rural Electric Course Program Announced

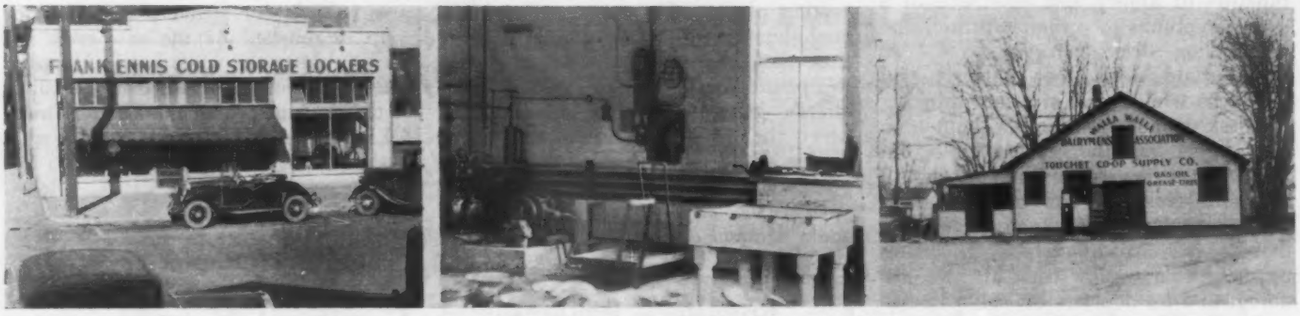
FINAL preparations are under way at Davis, Calif., for the staging of the annual Rural Electric Short Course from Dec. 9-11 at the University of California Agricultural Experiment Station, Davis, Calif. A tentative program has been announced to the industry by Ben D. Moses, who has the arrangements in charge.

The program for Dec. 9 begins with a discussion and presentation of papers and data on soil heating for cutting benches by J. R. Tavernetti. A one-year study of a stationary spray plant will be discussed by R. Bainer. Heat insulation will be discussed by R. L. Perry and car precooling by Frank Allen. A discussion of the methods for conversion of ice boxes into mechanical refrigerators will be led by E. J. Smith.

The second day's program will start with a discussion of the migrant in California agriculture, by Paul S. Taylor. M. R. Huberty will follow with "How to Determine Time to Irrigate." Another irrigation subject, "Irrigation of Cotton in California," by Frank Adams will complete the morning's session. The afternoon session will include "How to Select a Fan or Blower for Dehydration," by C. M. Barker. "Brooder Management," by W. E. Newton; "The Solar-Electric Water Heater," by F. A. Brooks; "Cold Storage Requirements for Eggs," by H. S. Almquist and "Feed Grinding," by J. P. Fairbanks.

On Dec. 11 Ben Moses will give his description of a proposed "Electric Tractor." H. L. Belfor will speak on "Dairy Sanitation." "House Heating With Electricity," by W. W. Hicks and "How to Select a V Belt," by H. D. Lewis will constitute the morning program. The afternoon final program will discuss "Frost Protection," by W. R. Schoonover; "Weeds and Their Control," by W. W. Robbins and "Pump Testing," by Roy Bainer.

Emphasis is made by Mr. Moses of the fact that the course is open to anyone interested in any of the subjects whether connected with the electrical industry or with farming or business.



Typical Northwest refrigerated locker service plants. (Left)—Specialized business in Walla Walla, Wash. (Center)—Interior of plant showing compressor unit and meat cutting block for convenience of customers. (Right)—Rural cream buying station which is equipped with cold storage room and lockers

Refrigerated Lockers Build Rural Load

By D. B. LEONARD
Agricultural Agent, Pacific Power & Light Co.

REFRIGERATED lockers for storing frozen foods in rural communities have been constructed in the Northwest during the past few years in numbers sufficient to create a new industry, employing a number of operators, meat cutters and attendants, and providing a new market for refrigerating equipment and electric power. Members of the Frozen Foods Locker Association in Oregon, Washington, and Idaho reported over 30,000 individual lockers in these states on January 1, 1935. A great many additional installations have been made since that time.

Creameries near Walla Walla, Wash., claim to be the first to have installed the locker system for food storage with the first installations made about 1930. Cream shippers to these plants observed that the refrigerated butter storage rooms were nearly empty at certain seasons of the year and requested permission to store a quarter of beef or half a hog until it could be consumed on the farm. The patrons were given this accommodation without charge. Creamery operators soon found their butter storage rooms at all seasons of the year filled with farm produce, much of which was poorly identified and which appeared as an eventual source of complaint about misplaced or stolen articles. To correct these abuses and to continue to provide refrigerated food storage accommodations for their shippers, the creameries divided the rooms into a number of individual lockers, separated by wood slat or woven wire partitions. These were rented to customers at a fixed annual rental with arrangements made for each patron to provide his own padlock and key for the protection of his private locker. The individual food storage lockers were then handled by the creameries similar to the methods used by banks in renting safe deposit boxes in a vault. Additional lockers were constructed in various sizes and were offered for rent to anyone who wished this service.

Thrifty housewives read advertisements about savings that could be made by quantity purchases of foods, placed in storage and used as needed, and hastened to rent a locker before they were all sold. To these townspeople farmers offered to sell a quarter of beef, half a hog or mutton at wholesale prices. The meat was cut, wrapped in heavy fiber paper, labeled and placed in the locker where it was frozen and kept until needed.

The actual weight and value of the cuts secured from a small 170 pound side of beef (Table I) illustrates the economy secured from quantity purchases.

Table I—Savings by Purchase of Meat Wholesale for Storage in Refrigerated Lockers

Weight (lb.)	Cut	Retail Price Per Pound (1934)	Total Value
19¼	Round Steak	$0.20	$3.85
3¾	Swiss Steak	.19	.71
11	T-Bone Steak	.20	2.20
15 5/6	Sirloin Steak	.19	2.01
11	Rump Roast	.12	1.32
9½	Soup Meat	.07	.67
8	Boiling Beef	.08	.64
10½	Rib Steaks	.18	1.89
12¼	Arm Roasts	.12	1.47
17	Shoulder	.11	1.87
13	Lean Boil	.10	1.30
6	Soup Bone	.07	.42
5	Rib Boil	.08	.40
17½	Plate	.08	1.40
6	Suet	.05	.30
¾	Kidney	.12	.09
166½	Beef at retail prices valued at		$20.54
	The 170 lbs. of beef @ 7½c purchased wholesale in 1934		12.75
	Difference		7.79
	Less cost of cutting and wrapping		1.70
	Balance to apply on locker rental		$ 6.09

Other uses of the lockers include the storage of fruits and vegetables. Berries are placed in glass jars or paper cartons, are covered with sugar to make their own syrup, and then are stored in the locker instead of being canned and sealed by the usual method. Strawberries, raspberries, black caps, cherries, peaches and apricots can all be satisfactorily frozen and stored for future use, and when consumed the flavor is reported to be much nearer that of fresh fruit than if the fruit had been cooked and canned. Many housewives purchase their winter supply of vegetables in the summer and store them in their lockers. The vegetables such as peas, beans, asparagus and sweet corn, are washed and then blanched in hot water for two minutes before being placed in containers to be stored in the cold room. Pans of water placed in the lockers become a convenient source of ice for cold drinks or ice cream, but ice making by patrons is generally discouraged by locker operators.

Spring fryers, hens, or game birds during hunting season can be picked and placed in storage without further processing. Many farmers kill all their broilers when they weigh about two pounds each and freeze them to have a supply of fryers available at all seasons of the year. Sportsmen store deer and elk meat in season, as well as ducks, geese or pheasants for a limited time until consumed. Fishermen can keep trout frozen stiff and piled up like cordwood for later use. These advantages also appealed to business and professional men who rented lockers to care for their game during hunting season.

Creameries installed refrigeration in their out-lying cream buying stations to provide locker service in the rural areas for the convenience of their shippers. The revenue from locker rentals in many instances paid the entire over-

head expense of the station, and the cooling facilities enabled the creameries to keep cream longer and in better condition than possible without refrigeration. Some creameries have three or four cream buying stations each equipped with 250 to 400 refrigerated lockers to serve their patrons.

Other business enterprises hastened to install lockers to serve their farm trade, and made installations in meat and produce markets, ice plants, fruit processing plants, cold storage concerns and in plants established primarily as locker-rental concerns. Thirty food storage locker establishments are now operating in the area served by the Pacific Power & Light Co. with over 8,000 individual lockers in use. When several members of the family desired access to the locker, key racks were established in the office to provide service similar to hotel key service. Blackboards are used to advertise products for sale or trade or to notify patrons of coming events. Meat cutting blocks are available for use by the farm patrons or by a regularly employed meat cutter who will cut, wrap, tie, label and place the meat in storage at prices averaging about $1.00 per cwt. of meat. Lockers are generally accessible to patrons from 7 a.m. to 9 p.m. daily and until 6 p.m. on Sundays and holidays, particularly when operated in conjunction with creameries.

Locker partitions are constructed mainly of ¾ x 1½-in. wood slats of a type that is not apt to have odors to taint food. One inch mesh poultry netting is also used, but has a tendency to stretch and sag when the locker is filled to capacity. As many as six tiers of lockers may be placed between the floor and ceiling. Minimum locker size is 18 x 24 x 30 in. or 7½ cu. ft., capable of holding approximately 250 lb. of meat and renting for $5.00 annually. Sizes range from 7½ to 20 cu. ft. capacity with 10 or 12 cu. ft. as the most popular size for general use. Rentals vary from $5.00 to $12.00 annually, with rates for upper or lower tiers generally $1.00 less than for more convenient locations. Refrigerating coils in the newest plants are stacked over the aisles to be more accessible for defrosting. The defrosting is done by mechanical methods or by reversing the refrigerating system for a short time, using care to do the job quickly to prevent undue temperature rises. Normal temperatures in lockers range between 5 to 10 deg. F. above zero, with 8 deg. as the usual value, and defrosting seldom raises this temperature higher than 20 deg. above zero.

Access to the cold room is usually arranged through a precooling or tempering room kept at about 35 deg. F. to prevent unnecessary heat loads from entering the room each time the door is opened. Meat for storage is generally hung in the precooling room for 24 hours or longer so it may become thoroughly chilled before it is cut. Chilled meat holds its shape better for cutting and eliminates the danger from possible spoilage which might occur if several hundred pounds of warm meat were to be piled in a locker at one time. Small loads of fruit, vegetables or poultry are placed directly in the locker without precooling.

Power equipment for a separate plant of average size would require from a 5- to 10-hp. motor, although a majority of the first installations already had refrigeration and merely extended the time of operating existing equipment to improve their load factor and to secure the additional refrigeration at a very low power cost. An analysis of the annual kilowatt-hour consumption of an installation of 402 lockers operated as an independent concern with a 7½-h.p. motor driving a 5-ton compressor and a 1-h.p. motor operating a pump to supply cooling water is shown in Table II.

TableII—Monthly Kw.-Hr. Consumption of Typical Refrigerated Locker Plant

Month	Kw.-Hr. for Lights	Kw.-Hr. for Refrigeration
July (1934)	48	3,649
August	73	3,533
September	57	2,454
October	82	2,860
November	115	2,097
December	144	1,785
January (1935)	175	1,867
February	173	1,351
March	127	1,109
April	110	1,129
May	107	1,286
June	111	1,634
12 Month Total	1,322	14,754

Two views of the interior of a Northwest cold storage plant which furnishes refrigerated locker service to its patrons. Note slat construction of lockers. More than 30,000 lockers are now in use

The greatest growth in the frozen food locker industry has been made in the agricultural trading areas. Approximately 85 per cent of the lockers are rented by farmers, but many professional and business men rent lockers to store meat and farm produce accepted from farm clients who are unable to pay in cash. Farmers frequently build up stock of excess meat and produce which is drawn on during harvest season when additional farm hands are hired. Practically all of the 30,000 lockers now installed in the Northwest are in use and additional units are planned in communities where there is a demand for the service of this new frozen food locker industry.

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• MOST INGENIOUS use yet for loud speakers connected to a home public address system through a radio set is that described in the Pacific Power & Light Co. Bulletin of June, 1935. A farmer in the company's territory mounted a radio loud speaker inside of a scarecrow which had become nothing at all to be frightened about in the lives of the local crows until it began to talk and sing at them. D. B. Leonard, agricultural agent for the company, was speculating as to whether loud speakers could not be placed in cherry trees to score birds away from the fruit.

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• ELECTRICALLY DRIVEN GARBAGE DISPOSAL is the newest in electrical household services. A device installed beneath the sink which grinds the waste food and disposes of it quickly through the drain pipe into the sewer system has been developed by the engineers of General Electric Co. It is driven by a ¼-hp. motor and will grind bones and other hard substances.

With the Trade Associations + + +

An Exchange of Plans and Ideas for Assisting the Industry in All Branches to Solve Some of Its Problems of Trade Relations and Business Ethics

P. C. E. A. Conclaves Probe Industry Problems

Continuing the policy established last year of acting as an all-industry forum for the discussion of engineering and commercial problems, the Pacific Coast Electrical Assn. opened the 1935-36 program with meetings held in Los Angeles and San Francisco during the last two weeks in October. Under the leadership of F. O. Dolson, vice-president of the Southern Sierras Power Co. and president of the association, the meetings were thrown open to the presentation of the problems which each branch of the electrical industry wanted considered for counsel and action by the electrical industry as a whole.

At the Business Development Section meeting in Los Angeles, Oct. 17, W. C. McWhinney, Southern California Edison Co., and chairman of the section, led the discussion. Speaking for the manufacturers, H. H. Fogwell, Thermador Electrical Manufacturing Co., asked, "How can all employees of the electrical industry promote selling and load building and thereby promote their own welfare?" He also suggested that consideration might be given the questions of "How can the electrical industry sell the building industry on a greater use of electricity?" and "How can the growing tendency to use substandard appliances and wiring be overcome?"

Questions which the electrical wholesalers submitted for review under the leadership of D. C. Pence, Westinghouse Electric Supply Co., included (1) "What plan could be developed to coordinate activities of the five branches of the electrical industry?"; (2) "What can be done to further consumer appreciation of major appliances?"; (3) "What can the industry do to help a dealer improve appliances?"; (3) "What can the industry do to help a dealer improve his sales organization?"

George Black, electrical contractor of San Bernardino, led a spirited discussion of the contractor's problem in present-day business during which time such questions as "What is the electrical contractor's place in industry sales plans?"; "What about the encroachment by utilities in the field of the contractors "; "How can the contractor-wholesaler relationship be improved?" and "How can the problem of the electrical contractors buying direct from the manufacturer be eliminated?" were asked.

The electrical dealer's viewpoint was presented by Mr. W. G. McWhinnie who suggested that a uniform policy of sales, service and installation could be studied profitably by the association.

Representing the utilities, P. P. Pine, San Diego Consolidated Gas & Electric Co., asked the following questions: (1) "What can the electrical industry do to popularize the use of electrical table appliances in the home?"; (2) "How can the five branches of the industry profit to the fullest extent from the funds being expended by the utilities in sales promotion?"; (3) "How can the public be convinced that rates are low?"; and (4) "What are the utilities going to do about the challenge of surplus power?"

The Northern Section of the Business Development Section met in San Francisco Oct. 24 with A. H. Nicoll, Graybar Electric Co. and vice-chairman of the section, presiding. After greetings by President Dolson and past president Arthur Markwart the problem of the motor manufacturer was presented by Kurt Steindorff, of General Electric Co. This was followed by a paper on apparatus manufacturers' problems presented by Jerry Rosenblat, Westinghouse Electric & Manufacturing Co., who also read a paper commenting on the subject from A. E. Wilcox, manufacturers' representative. Switchboard manufacturers' problems were presented by Lester Siebert, of Drendell-Trumbull Electric Manufacturing Co. Charles Goodwin, General Electric Supply Co., presented an excellent paper on wholesalers' problems dealing with unethical competition faced by wholesalers. Grover Anderson, representing Hubbell Co. gave a paper on wiring device problems which were chiefly problems of getting additional wiring installed.

A noon luncheon at which over 250 were in attendance was addressed by Dr. G. W. Allison, sales director, Edison Electric Institute who pointed out the responsibility of everyone in the electrical industry to defend American methods and principles of doing business.

The afternoon session continued with a paper presented by James Crilly, General Cable Corp., who presented the problems of the wire manufacturers.

The bombshell paper of the day was presented for the Electrical Contractors Assn. by Lewis Doust Buzzell Electric

They ran the conclaves—Left to right: W. C. McWhinney, chairman; Al Nicoll, vice chairman, Business Development Section; K. B. Ayres, chairman; A. W. Copley, vice chairman, Operating Economics Section

Works, San Francisco. It was a challenge to the industry to put cooperation to action rather than words.

Arthur Kempsten, National Electrical Products Corp., presented a problem paper for the schedule material manufacturers. He was supplemented by a paper from John Wrenn, representing the Pacific Gas and Electric Co. and by Harold Gerber, Department of Electricity, San Francisco, representing the inspectors' viewpoint. Final paper on the utilities' problems dealing with the problem of getting dealer cooperation was presented by Harry Carroll, Pacific Gas and Electric Co., and followed up later by R. A. Crosby, Los Angeles Gas and Electric Corp.

At the two meetings of the Operating Economics Section, one held in Los Angeles under the leadership of K. B. Ayres, of the San Diego Consolidated Gas & Electric Co., and one in San Francisco under the leadership of A. W. Copley, of the Westinghouse Electric & Manufacturing Co., the following problems were presented. "How and what types of new load can be added to existing facilities?" was presented by A. S. Glasgow, San Diego Consolidated Gas & Electric Co., and one in San Francisco under the leadership of A. W. Copley, of the Westinghouse Electric & Manufacturing Co., the following problems were presented: "How and what types of new load can be added to existing facilities?" was presented by A. S. Glasgow, San Diego Consolidated Gas & Electric Co., and "What are the economical limits of continuity of service?" by G. M. Babcock, of the Los Angeles Gas & Electric Corp. and C. N. Parker, of the Southern Sierras Power Co., Riverside. The last two questions which came up for consideration are "How can the cost of electric distribution be lowered giving due consideration to adequate service and regulation?" and "How can wiring methods for electrical services be simplified for the purposes of cost reduction?"

The above problems will be reviewed by the guidance committees of the two sections and from them will be prepared four problem papers for the Business Development Section and four problems papers for the Operating Economics Section which will be presented to the membership at large for solution in a prize contest. The problem papers will be published in the December issue of Electrical West at which time announcement of the contest will be made. The fall meetings were characterized by a frank discussion and intense interest on the part of all branches of the industry and it is anticipated that much will result.

W. S. Hill, of Grays Harbor, stands by Tom Purton, of Idaho Power, vice chairman of the Engineering and Operating Section

Northwest Association Plans Work for Year

Organization and program of the Business Development Section and Engineering and Operation Section of the Northwest Electric Light and Power Association occupied the executive committees of these sections in recent meetings.

Commercial executives meeting at the call of W. C. Mainwaring, B. C. Electric Railway Co., Vancouver, section chairman, elected George Wisting, Northwestern Electric Co., Portland, vice-chairman of the section, and the following bureau chairmen: Residential Sales, J. A. Lockhart, Pacific Power & Light Co., Portland; Commercial and Industrial Sales, O. C. Mayer, Idaho Power Co., Boise; Rural Sales, R. S. Overstreet, Idaho Power Co., Boise.

Lighting is to be lifted out of the bureaus this year and given the important status of a special committee headed by J. C. Plankinton, Northwestern Electric Co., Portland. Walter Potter, Incandescent Lamp Department of G. E. Co., Portland, is vice-chairman of the committee to handle residential lighting, and George M. Boyd, Westinghouse Lamp Co., Seattle, vice-chairman on commercial and industrial lighting. The Advertising Committee has been revived as a special committee and has been placed in the hands of J. Lightbody, B. C. Electric Railway Co., Vancouver. It will number in its personnel utility advertising managers and account executives of agencies handling utility accounts and will discuss various advertising problems as they develop during the year. A meeting of the committee is to be held this fall.

Water heating will be the major subject for study in the residential field engineers as well as salesmen. Two major phases of the water heating business will be covered: (1) successful sales methods, and (2) technical phases having to do with the design of equipment, control of equipment and rates. Departing from former types of organization of the bureau by committees devoted to different appliances, the bureau will contain one other major committee devoting its study to the minimum-bill customer with the intent of suggesting practical means of making a better power user out of this class of customer. This committee is to be headed by Glenn Jackson, The California Oregon Power Co., Medford.

The Commercial and Industrial Sales Bureau will contain three committees as follows: Commercial Cooking, Carl Hoffman, The Washington Water Power Co., Spokane, chairman; Industrial Power, J. C. Munro, B. C. Electric Railway Co., Vancouver, chairman; Air Conditioning, D. O. Bergey, Northwestern Electric Co., Portland, chairman.

The Rural Sales Bureau will produce an economic study answering the question, "Why we have to build load on rural lines" and will examine the types of rates in use in the territory and the methods by which equipment is distributed to farm users with particular reference to financing. Additional sections to the "Electricity in Agriculture Handbook" are also to be published.

The annual meeting of the section is scheduled for Spokane and the dates tentatively set in February.

The Engineering and Operation Section meeting in Seattle at the call of its chairman, Joe Hellenthal, Puget Sound & Power Light Co., confirmed the following chairmen of its four major committees: Production and Generation, E. H. Collins, The Washington Water Power Co., Spokane, chairman; Transmission and Distribution, M. T. Crawford, Puget Sound Power & Light Co., Seattle, chairman; Utilization, Paul P. Ashworth, Utah Power & Light Co., Salt Lake City, chairman; General, J. B. Fisken, The Washington Water Power Co., Spokane, chairman. Vice-chairman of the section is T. A. Purton, Idaho Power Co., Boise.

Operating matters will again predominate in the committee programs except that in the Production and Generation Committee there will be a discussion of the design and construction of the new hydro-electric plant under construction by the Idaho Power Co. on the Snake River. Among the subjects to be considered by the Transmission and Distribution Committee will be a study of the design and equipment for rural lines.

The work of the Utilization Commit-

tee will be divided into four divisions headed by sub-committee chairmen as follows: Utilization Devices, Walter Brenton, Portland General Electric Co., Portland; Wiring, S. B. Clark, Northwestern Electric Co., Portland; Illumination, F. H. Murphy, Portland General Electric Co., Portland; Meters, L. D. Snow, Puget Sound Power & Light Co., Seattle.

The principal work of the General Committee will center around Accident Prevention under a committee headed by J. D. Ellis, Northwestern Electric Co., Portland. Among the studies of this committee will be a report on the causes and remedies of traffic accidents.

The annual meeting of the section is scheduled to be held in Spokane in May.

Berkeley Snow, ever handy executive secretary of the Northwestern association, with E. H. Collins, Washington Water Power, chairman of the production and generation committee

Contractors Enlarge Local Representation on Board

INFORMAL but none the less important were discussions of contractors' problems and association affairs at the annual meeting of the Northern California Chapter, National Eectrical Contractors Assn. held at Santa Cruz, Oct. 11-12. Called together rather hurriedly in order to take advantage of information as to the N.E.C.A. convention from which Lloyd Flatland, executive committeeman, had just returned, the attendance was small but it was representative of each of the various districts in northern California. Therefore, no formal program was adhered to; rather the discussion centered upon all of the various types of problems confronting the association.

These discussions encompassed in their wide range the future of the northern Chapter, prospects and proposed program under the new regime of the N.E.C.A. with Earl Peak as president, participation in the Pacific Coast Electrical Assn. conclaves, wholesalers' and manufacturers' relations problems, representation on the State Contractors License Board, increasing membership, and revision of the scheme of representation from the various districts.

At the close of the meeting Charles A. Langlais was elected president of the chapter to succeed Lloyd Flatland, who has been president for the past two years. Mr. Flatand expressed a desire to act only in the capacity of the national executive committeeman for the region and to correlate the activities of the chapter with those of other Western chapters in his region.

The constitution and by-laws were amended to provide that the presidents of all local Associations affiliated with the Northern California Chapter shall automatically become members of the executive committee of the Chapter. These presidents are to serve in addition to four district representatives and the officers who previously had made up the committee.

Besides Mr. Langlais other officers elected were J. Del O'Connor of Lupen & Hawley, Sacramento, first vice-president; Louis Douat, Buzzell Electric Works, San Francisco, second vice-president; Ed Martin, Sterling Electric Co., San Francisco, secretary-treasurer. District executive committeemen elected were George Draeger, District 1, comprising San Francisco and Monterey Bay area; George Foss, Sacramento, District 2, representing the Sacramento Valley; Les Polland, Eureka, District 3, representing Humboldt District; and H. H. Courtright, Valley Electric Co., Fresno, District 4, representing the San Joaquin Valley and coast counties.

Presiding at the informal convention was Lloyd Flatland (right), president, while Mano Zan, Louis Douat, and Secretary Ed Martin took it easy on the chesterfield

Under the new representation plan about eighteen local associations who have members in the Northern Chapter will be represented by the president of each local group automatically on the Northern Chapter executive committee, providing he is a member of the Chapter.

The next meeting, which is planned for the early Spring, is to be held in Fresno.

Among the subjects warmly discussed were: the proposed national program for securing adequate differentials for the contractor over the consumer; pending and present legislation affecting the conduct of business, such as the Social Security Act and its application under the State of California unemployment insurance and old age insurance provisions.

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Butcher Named To Contractors Board

ROY M. BUTCHER, San Jose, electrical contractor, was named by Governor Merriam of California as a member of the newly formed Contractors' License Board authorized by revisions to the Contractors' License Act at the last session of the legislature. The new administrative group will proceed immediately to determine policy and set up regulations for the operation of the Contractors' License Bureau. This bureau has previously been operated as a division of the Department of Professional and Vocational Standards, and although it will continue to operate under that department it will be guided along the lines laid down for it by the newly appointed board, according to Glen V. Slater, assistant state registrar of contractors.

Roy Butcher has long been prominent in electrical contracting activities in northern California. He has been a member of the executive committee of the northern division California Electragists and of its successor, the Northern California Chapter, National Electrical Contractors Assn. He has also been prominent in electrical circles in Santa Clara region, having been the first president of the Electrical Development League of Santa Clara County.

Members of the new board serve without pay for terms ranging from one to four years. They were selected by the Governor for both geographical and craft representation. Other members of the board are Warren A. Bechtol, Jr. of Six Companies, San Francisco, representing the engineering profession; Hugh McNulty of Fisher & McNulty, Fresno; Ralph E. Homann,

Los Angeles; and S. G. Johnson, Oakland, representing general contractors; Stephen L. Ford, Long Beach, plastering contractor; William Nies, Los Angeles, plumbing contractor.

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Seattle Contractors Name New Officers

H. M. Sayers, who was vice-president of the Seattle Chapter, National Electrical Contractors Association, last year, was elected president of that organization at its recent annual meeting. He succeeds J. J. Agutter, pioneer electrical contractor who has served as president during the Code period. Other officers elected were L. J. Benedetti, vice-president; and O. A. Carlson, secretary-treasurer.

Mr. Sayers, as long as anyone can remember, has been owner of the Abbott Electric Company, 1019 Eastlake Avenue, Seattle. Mr. Benedetti has been in the electrical business since about the age of seven. His firm is the Industrial Electric Company, 1304 Stewart St. "Al" Carlson conducts the O. A. Carlson Electric Company, 2212 Second Avenue. H. M. Hudson is executive secretary for the Chapter and offices are maintained at 4134 Arcade Building, Seattle.

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San Francisco Adopts Code of Self Government

AFTER many months of negotiation and preparation the Code of Self-Government for the Construction Industry in San Francisco County was placed in operation last month. The Code was signed by eight separate contracting groups and operation of the Central Bid Depository which had been set up during the NRA Code was resumed.

Operation of the Code shifts the administration of hours, wages and working conditions pertaining to all crafts from the local associations to the Code of Self Government. Duplicate bids are filed on jobs of $100 or more having two or more trades engaged in its construction. They are filed in the Central Bid Depository much in the same manner as they were for the operation of the NRA Codes. A poster is assigned to each construction job and each craft has a distinctive stamp which is affixed to this poster. These stamps are an indication of compliance with wages and hours set up under the terms of the Code.

Briefly, under the provisions of the Code of Self Government, wages and hours and working conditions which were in force prior to the Code are to be maintained. Open or closed shop status is not changed with respect to any crafts. On matters relating to labor, an adjustment board is appointed. It consists of four members representing labor, and four members representing employers, with the executive manager acting as chairman.

A final arbitration board is set up over the adjustment board for the settlement of any disputes and holding of hearings on any changes in wages, hours, working conditions or other provisions of the Code. This arbitration board of three men is selected jointly from among citizens of the community who have no interest, financial or otherwise, directly or indirectly, in the construction industry. The only fair trade practice rule enforced by the Code is that against bid peddling. Other regulations are left to the individual associations to determine for themselves.

By the operation of this Code of Self Government the San Francisco building construction industry hopes to provide a forum for the adjustment of any difficulties and solution by peaceful means of all problems of the industry and to prevent for all time disruptions due to labor troubles or inter-industry conflicts.

Charles A. Langlais, former president of the San Francisco Electrical Contractors Assn., is representing the electrical contractors on the adjustment board.

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Wholesalers Discuss Trade Practice Rules at Coronado

Among the important matters coming up for discussion at the Pacific Division of the National Electrical Wholesalers Assn. convention at Hotel Del Coronado, Coronado, Calif., October 28, 29 and 30, was that of deciding whether to set up operations of the Fair Trade Practice regulations authorized by the Federal Trade Commission just prior to the advent of the NRA Codes. Discussion on this subject was also had at the National Convention which was held the week previous in the East. Harry L. Harper, Graybar Electric Co., Los Angeles, had attended the Eastern meeting and brought back with him the results of deliberations there to the wholesalers convention at Coronado. Rudy Holterman, Westinghouse Electric Supply Co., San Francisco, has been appointed commissioner under the FTC arrangement and is clearing information on this subject.

Holding the meetings at Coronado enabled the visitors to take in the Exposition at San Diego across the bay, just prior to its closing. A feature of the meeting was a special dinner staged by the Ben Franklin Club of Los Angeles, an organization of manufacturer's agents and distributors. From interest aroused by this live organization action to form a similar club in the San Francisco region is eminent.

State Coordination Dept. Helps Bring Understanding

Indicating a trend towards closer coordination on all fronts has been the work of Mano Zan of the Division of Coordination, Contractors' License Bureau of the State of California. Originally conceived to coordinate the various craft groups in the construction industry toward the better working of their master and subdivisional codes, Mr. Zan's work has continued along these lines. Now he renders assistance to the construction groups desiring to set up codes of self-government according to the new concept of NRA.

In the electrical industry and other similar industries there is a double problem. It is one of coordinating the various branches of that industry with each other as well as to keep in touch with cross-sectional industries such as the construction industry, to which at least one or more of the industry's groups also belong. The electrical contractors, the manufacturers, and the wholesalers, for example, are also affected by the construction industry in their operations and movement.

A neutral adviser to correlate all of these interests together is regarded as a dsirable service to both industries by many of the leaders in cooperative work.

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• SOUTHERN CALIFORNIA CHAPTER, National Electrical Contractors Assn., is still receiving orders for copies of its manual labor units for electrical estimators, a simplification and revision of the Electragists' system of estimating, and authorized by the N. E. C. A. Requests come in from all parts of the United States and even from Canada for these manuals, which are being sold for their production cost of $1.00 a copy. A new edition of the manual is being planned since the original edition has been almost exhausted.

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• SHOWING A TREND toward bolstering up powers of the Federal Trade Commission to take on some of the responsibilities which were developed by the late NRA for the regulation of industry was a bill introduced to the Senate by Senator O'Mahoney, known as S.3363 embodying new proposals for the Federal regulation of business. The membership of the Commission would be increased from five to nine, including three representatives from employers, employees and the consumers. A rather complete analysis of the proposed bill is given in the Sept. 12 issue of NEMA News.

Bill Jones Speaks + + +

on Labor

"HEY, Bill," shouted the Manager, "come here. Glad to see you. Sit down and have a cigar."

"Sure," retorted Bill. "What is the matter with it?" Hesitatingly he accepted the proffered gift, scrutinized it carefully, made some minor repairs to a torn section with a lick of his tongue, bit off the end, applied a match, took a few puffs, removed the cigar from his mouth, looked it over critically and then, "You know you really shouldn't give an honored guest any cigar which retails at less than two-for-a-nickel. It isn't etiquette."

"Never mind all of that," said the Manager impatiently. "I am in trouble; or perhaps I should say that I may be in some little difficulty."

"Oh, yes," puffed Bill. "I can read; and I do glance over the daily papers. I see there's talk of unionizing all of the employees of your company that heretofore haven't belonged to anything except the commercial baseball league. Well, what about it?"

"Well, it makes me peeved. We have always treated the accounting people, the meter room people, and the salesmen right, and now in these times when the company is beset with trouble and hardly knows which way to turn, they start this, and that when 20,000,000 are out of employment or on relief. You used to belong to a union didn't you? Thought you might know something of how its mind works."

"Yes," said Bill. "I certainly did belong to the old Western Federation of Miners, and certainly I am as good a union man as I ever was. I have punched more holes in the ground up in Eldorado County than you have cigars to give away. Even if I haven't worked at it for a dozen years I still hold my card and I know how the Union mind works. The leaders of labor want to get all there is for the working man and woman. I wanted the same thing. The only difference between us was that I thought that I was smarter than they were and when they proposed to accomplish that very desirable end by catching Capital out in a dark alley and sandbagging it, my creed prompted me to coax it out on the lawn the first bright sunshiny day and gently administer a pleasant smelling anaesthetic before operating.

"It isn't wholly labor's fault if it falls off at a tangent and chases unfaithful gods. When have you missed any golf games in the past to teach your own people the fundamentals of your business? Instead of unloading a share in your problems and in the perplexities of your business on your own men and women, pretty generally you have said to yourself at least: 'It's none of their business,' and you probably emphasized that puerile observation with profanity. Strictly speaking perhaps it isn't any of their business, but when trouble arises and the emergency comes, who is to blame if your appeal to the intelligence of your employees goes over their heads or through them without meeting any resistance at all? *You can't take anything out of a bottle which hasn't first been put into it,* and all of these years men have been dissatisfied with their condition and with their relations to one another and because they didn't understand just what was wrong, and because they haven't understood your side of the case and your problems—which could and should have been made theirs. And because you haven't understood *their* problems—which should have been yours—and haven't tried to, they have been taught by fellows who didn't have any golf engagements, to believe a lot of things which aren't true, just as you believe a lot of things which aren't true. We all get at conclusions, either by a process of logic or get kicked into them.

"The Business Agent—they called 'em in my day—gets your laborers together in a hall and he says, 'Fellow workers, in the beginning, man received all that he produced—one hundred per cent,' and he turns around and makes a dot in the upper hand corner of the blackboard. 'Today labor gets only 40 per cent of that which it produces,' and he makes another dot to the right and a little below the center, drawing a straight line from one to the other. 'You see, don't you, the direction that line is taking? You got 100 per cent a few years ago, 40 per cent now. Next it will be 30 per cent; then 20, and then 10, and then—what? Who is robbing you of the balance of what you produce? The Capitalist profiteer, that's who! Throw him out! Take over the plant! It belongs to you; you created it; run it yourselves and get all you produce for yourselves and your families. Let his wife and daughter go without shoes and starve like yours do.' And the boys and girls get all fussed up and make a lot of talk because that diagram on the blackboard seems conclusive and unanswerable. No one is there whose business it is to point out to them that in the days when 'labor was getting all it produced,' there wasn't much to get and it was working eighteen hours a day and sleeping on rags and skins at night in order to produce enough to exist at all. Labor still gets all it produces and all that anybody else produces. The only way in the world you can spend a dollar without labor eventually getting one hundred cents of it is to throw it into the ocean.

"The principal trouble with labor is in its leadership (which, whether you know or not, you foolishly help to create) and in the leadership of its opposition—which is you. Wise employers—if there be any—will encourage intelligent leadership, and not by ill-advised antagonism turn the organization's activities over to the agitators and the thugs. Labor doesn't need cussing. It needs help, and this help must above everything else, be genuinely sympathetic and understanding.

"*And while it's true that nothing can be taken out of a bottle which hasn't first been put into it, it's equally true that when the bottle does upset, anything that has been previously put in will run out.*

"And this cigar is just plain punk. Why don't you pass out Flit instead?"

From Pretzels to Neon

That beer had made business, A. C. McCabe, of Apex Electric Co., San Francisco, knew from his sign business. But he was surprised to learn that pretzels and neon were brothers under the skin. Not long ago Mr. McCabe advertised in a daily paper, *"Wanted: Neon tube bender. Must be fast."* Imagine his surprise to get the following application: *"Dear Sir: I was head pretzel bender for a large cracker company for many years. With my past experience, and with your guidance I am sure in a short time I would be able to master the art of Neon tube bending. I feel they are both trades likened to each other, and if you will bear with me I will take the job."*

Cooperation on Parade + + +

[*Forecast of forthcoming cooperative merchandizing activities, and review of activities in progress or completed, a summary of cooperation at work throughout the West*]

Utah Utility Starts a Half Off Plan

ANNOUNCING a sensational half price electricity plan, the Utah Power & Light Co. indicates to dealers in its territory what this will mean in increased use of appliances and consequently opportunities for more sales. The plan became effective on meter readings after Oct. 1. The plan means that customers are enabled to purchase electricity for additional uses at one-half the scheduled energy rates until, by extended use, they reach the new and very low objective rate. To encourage fuller use of electric service a 50 per cent discount is given on all kilowatt-hours used in excess of those taken during the corresponding month in the 12-month period ended with the meter readings in June, 1935.

The rate itself, in cities above 15,000 population, is 90 cents for the first 11 kw.-hr.; 5 cents per kw.-hr. for the next 25; 2.5 cents for the next 164, and 1.5 cents for all additional consumption. In cities under 15,000 and rural territory the rate is the same except that the monthly minimum is $1 for the first 11 kw.-hr. instead of 90 cents.

A similar objective rate for commercial lighting is set up.

In addition to the half price plan, the company changed the residential lighting schedule by lowering the rate to 4 cents a kw.-hr. after the use of 86 kw.-hr. in any month. The residential refrigeration rate, which was 4.5 cents per kw.-hr. above the minimum of 76 kw.-hr., has been reduced to 4 cents.

A further help to dealers in the cooperative program is the publication of a monthly newspaper entitled "Electro Dealer." The publication contains the monthly dealer sales reports on electrical appliances and equipment formerly issued in mimeograph form. Also it runs brief, stimulative articles on dealer achievements, new programs and promotional campaigns.

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Rocky Mountaineers to Stage Electric Jubilee

Three solid weeks will be dedicated to The Electric Jubilee by electric merchandisers in Colorado, Wyoming and New Mexico.

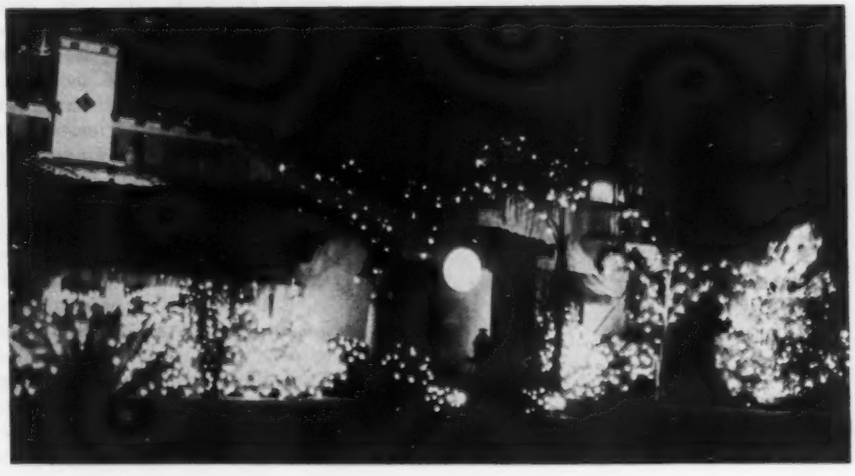
Sponsored by the Rocky Mountain Electrical Assn. and Electrical League of Colorado, The Electric Jubilee will be ushered in December 2, to coordinate with Edison Electric Institute's national Electrical Housewares Week, and continue until Christmas Eve, with more than 4,000 dealers and their staffs, and some 5,000 representatives of utilities, distributors, manufacturers and other interests taking part in the movement.

Special housewares week display poster of E.E.I. which is to be used in a national window display contest. Details will be mailed to cooperative groups Nov. 15

This tremendous sales activity will be the fifth and most powerful Christmas merchandising campaign staged in the Rocky Mountain Region under R.M.E.A. and Electrical League auspices. Each successive drive has been more successful than the one preceding. The 1935 program will be climaxed in Denver on Dec. 22 when $5,000 in prizes will be distributed at the Municipal Auditorium to winners of a contest centering on a "Cinderella House" which is to be completely electrified and given away by local merchants. The competition is devised to test the skill and knowledge of competitors in placing electric household equipment where it belongs with reference to convenience outlets on a diagram provided for the purpose.

Similar contests are scheduled in cities and towns outside of Denver. This type of activity will be joined with Edison Electric Institute's best show window prize offering. In each instance where three or more merchants or electrical dealers in a community enter the national event, supplementary awards are to be given by R.M.E.A. and local electric utilities.

Tying in with major features are numerous other events, headed by Tri-State Christmas Lighting contests, each conducted independently in various communities. A rich array of prizes, ranging from knick-knacks to costly electric appliances; daily publicity in the press; wreaths, stickers and Christmas banners, and all promotional agencies of R.M.E.A. and Electrical League are calculated to stimulate public electri-consciousness on a more ambitious



Christmas season calls for cooperation in outdoor lighting activity—and this home on Los Angeles Bureau of Power & Light lines, which used over 1,000 lamps, is a symbol of both civic beautification and industry adrantage

scale than has previously been attempted.

The 1934 Christmas season found many Rocky Mountain Region dealers and wholesalers "out of stock," due to heavy demand for things electrical. To guard against a repetition of this situation and prepare for an even heavier buying siege, George Bakewell, Jr., and George E. Lewis, executives, respectively, of Electrical League of Colorado and Rocky Mountain Electrical Assn. contacted all prospective participants in the Electric Jubilee during October, outlining plans and laying the groundwork for the biggest of all cooperative electrical merchandising projects.

Mrs. Lillian Kagen, who last year won the Rocky Mountain Electrical Assn. contest staged by the women's committee to promote the idea of "Give Something Electrical for Christmas." The girls of the Public Service Co. of Colorado plan a similar drive this year

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• THE ELECTRICAL EQUIPMENT SALES ASSN. of Idaho points out in its last bulletin that harvest days for the farmer bring opportunities for merchants handling electrical appliances and equipment. With many new line extensions and general farm conditions as favorable as they are this year, L. W. Brainard, General Secretary, stated "we all should enjoy a real profitable harvest from this source."

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• PUBLIC SERVICE CO. OF COLORADO has again placed into the field to sell Mazda lamps a large force of unemployed. These men are especially trained to call at each house and take orders for lamps, to be later delivered and charged to the light bill. They take no money. Salesmen are identified by a blue arm band and advertising, paving the way for their approach, uses the slogan "Look for the man with the blue band."

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• COAL DEALERS of Salt Lake City, Utah, in cooperation with electrical dealers handling such lines, staged a coal-stoker show featuring automatic heat with coal. Prize contests for letters containing about 200 words featuring automatic heat with coal, electrically driven, were offered the public.

Old Timers Provide Modern Contrast at Bureau Dinner

ORIGINAL both in method of presentation and in general scheme was the highly successful 35th anniversary dinner staged in San Diego by the Bureau of Radio and Electrical Appliances on Sept. 6 at El Cortez Hotel. Novel was the idea of contrasting the first appliances ever developed in the industry with those of today. No less novel was the occasion to pay tribute to the pioneers among the customers in San Diego County who had first tried electrical appliances while they were still "new fangled contraptions." No less novel was the tricky use of electrical recording in the presentation of the program of future advertising and promotional campaigns.

Conceived as a means of stimulating fall and winter appliance selling and at the same time calling attention to the great improvement in electrical appliances during the 35 years of their existence, the meeting was consistently carried through with this theme in mind. After an introduction of the new president of the society, Harry Callaway, by E. W. Meise, past president, Mr. Callaway introduced a pioneer electrical dealer, Carl Heilborn, who told of early appliance selling and introduced a number of the original purchasers of appliances to the audience.

Previous to the meeting Miss Stella Watts, a dramatic producer of San Diego, had gathered material from original purchasers of appliances and from original salesmen and had written a skit depicting the sale of the first electric iron sold in San Diego County to the Hotel del Coronado. The skit was laid in a scene of 1902 furnishings and equipment. Several of those present in the audience were characterized by the actors who reenacted the scene of that first sale. A. B. Shaw, who was present, was that first purchaser of an electric iron and Carl Heilborn himself was the salesman. Mr. Marsden was the first purchaser of an electric range and A. E. Holloway, vice-president in charge of sales at the power company, was the first salesman. Other old-time dealers and purchasers were introduced. Among those named were A. E. Johnstone, city electrical inspector; A. E. Holloway, San Diego Consolidated Gas & Electric Co.; Sam Hall, Electric Supplies Distributing Co.; Earl Meyers and Carl Messner, both dealers; G. H. P. Dellmann, Al May and Percy Pine, all of the power company and Louis Blanken, first radio dealer. The old-timer part of the program was closed with a spectacular toast to old-timers.

The second phase of the program was that of the present. J. Clark Chamberlain, secretary-manager of the Bureau, reviewed the activities of the Bureau during the past two years, during which 18 separate campaigns featuring all types of appliances have been conducted. Among these were 6 promotions using car cards during 30-day periods, 73 radio programs of 15 min. each and 500 spot announcements, 186 individual outdoor billboards for a 30-day posting, 1,500 individual window posters used by the dealers, contest and campaign material involving upward of 50,000 entry blanks, forms and cards in the various campaigns, and newspaper advertising of more than 500 individual ads, equivalent to 125 full pages of advertising in the city and county, not including reams of valuable publicity.

Among accomplishments he pointed out that dealers had stepped up refrigeration, radio, washer, ironer and other appliance sales far in advance of all previous records.

The third phase of the program, looking into the future, was introduced when F. M. Raymond, advertising superintendent of the San Diego Consolidated Gas & Electric Co., outlined a program of advertising of over $10,000 for the balance of the year. This will include a "radio appreciation" series of 15-min. programs for fifteen consecutive Sunday evenings from Sept. 8 to Dec. 15. During these, fine music is presented and a rapid summary of the forthcoming radio programs of the week is made. These programs are presented over station KGB at 7:45 p.m. each Sunday evening. In addition to this, spot announcements are to be used, each of which are kept down to the minimum of wordage. These will stress the modern radio and its superiority over older sets. Small ads in the amusement section of the Sunday paper are to call attention to the radio feature.

A light bulb campaign beginning Oct. 1, is also to be featured on fifteen billboards, 25 street car cards and 200 dealer window cards will be available for tie-in. A "better vision" campaign featuring nine 15-min. radio programs and 27 large newspaper ads, outdoor postings and car cards will call attention to nine home lighting demonstrations to be held at a local auditorium.

The Christmas campaign beginning in November will use fifteen billboards, dealer window cards, 24 large newspaper ads in 40 country papers, street car posters, outdoor boards and 156 50-word radio announcements.

A novel stunt was used by Mr. Raymond in the presentation of his talk. Beginning in the customary manner, he was interrupted by the sound of his own voice coming from a radio loud speaker above him. This voice criticized him for not getting down to the fundamentals of the program immediately and asked him to step aside and handle the charts while the voice carried the story to the audience. It was done by means of a cleverly timed recording made by Mr. Raymond previously and proved a surprise feature. It also gave him the opportunity to handle the charts and cards without interruption while the talk went on in his own voice.

Al Joy, director of publicity and advertising, Pacific Gas and Electric Co., San Francisco, was the feature speaker, talking on the romance of the electrical industry. He stressed the sales opportunities lying ahead of the people in the electrical business during the succeeding years.

Another clever use of the recording mechanism was made to close the meeting. Led by Al Joy with a toast to old-timers and other short talks by W. F. Raber, president of the San Diego Consolidated Gas & Electric Co., and George Bauder, General Electric distributor, a recording was made of their remarks without their knowledge and was used to close the meeting as it was repeated back over loud speakers to the audience which had heard the talks made.

This spectacular dinner-meeting opened a week of displays in which old-time appliances were contrasted with modern up-to-date electrical appliances in practically all the stores in San Diego County.

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Fair Year Proves San Diego's Biggest

Proving to be the greatest electric appliance year on record in San Diego County, 1935 is declared by E. W. Meise, superintendent of merchandising, San Diego Consolidated Gas & Electric Co., to be the outstanding year in the company's history as well. Up to Aug. 31, 5,075 refrigerators have been sold as against 2,737 for the same period last year. August itself produced the greatest number of sales, 1,250, even surpassing by 100 the all-time record that July had just established. In fact, the August of this year produced slightly more than three times the refrigerator sales of August, 1934.

Electric ranges had almost doubled the sales mark of a year ago. Last year there were but seven sales of electric water heaters, whereas this year the total has been 320. Automatic ironers almost doubled last year's volume and radio is approximately 1,000 sales ahead of last year, with 7,075 sales.

Continued aggressive promotion by the Bureau of Radio and Electrical Appliances, backed by strong dealer-distributor advertising, is held responsible for the remarkable results of this year.

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A Christmas Electrical Show, to be held at the Municipal Pier, Dec. 4th to 8th, 1935, has just been decided upon by the Bureau of Radio and Electrical Appliances of San Diego County. This will be the organization's third electrical exposition; deferred until this time by reason of the California Pacific International Exposition in the city this year. Details as to exhibits, space, promotion, etc., are available from J. Clark Chamberlain, manager of the Bureau. Everything indicates that it shall be a great stimulus to Christmas buying of appliances.

Better Vision Campaign On in San Diego

A BETTER vision campaign, in which all dealers of San Diego County are participating, is being carried on jointly by the Bureau of Radio & Electrical Appliances of San Diego County and the sales division of the San Diego Consolidated Gas & Electric Co. Attractive oil processed window display cards were distributed to all dealers selling light bulbs. Billboard and streetcar advertising tie-in, as well as newspaper advertising is promoting the event. Furniture, department and other stores handling floor and table lamps are being furnished with special material to enable them to tie in with the campaign.

On the radio, nine 15-min. radio programs were given each Wednesday evening dramatizing incidents in the life of Thomas A. Edison.

A school of better seeing was being conducted every Tuesday afternoon in the Electric Building assembly room, at which A. I. Benedict, illuminating engineer for the company, told a story through motion pictures and lighting demonstrations of better light for better sight.

The power company itself has a crew of fourteen men under the direction of E. W. Meise, superintendent of merchandising, making a house-to-house canvass, telling of the new lamp, leaving one for free trial and selling these lamps on easy payments. The goal set was 1,500 I.E.S lamps by Christmas for company sales, with the possibility of a similar number of dealer sales. Likewise, a special campaign to sell lamps to employees of the company was made during the month and continues until Nov. 30.

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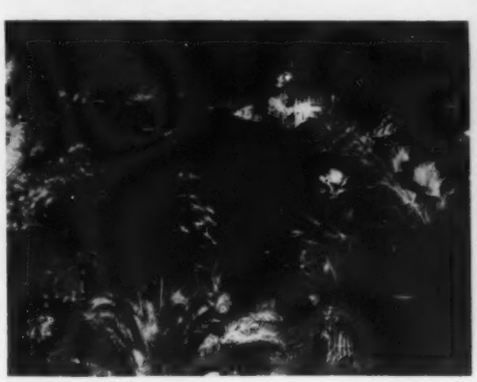
• THAT SAN DIEGO COUNTY DEALERS have taken advantage of the opportunities offered under Federal Housing Administration loans was cited by J. Clark Chamberlain, manager of the Bureau of Radio & Electrical Appliances of San Diego County, in his last bulletin. Up to Sept. 19, 2,467 Title I loans had been made by the banks of San Diego, of which two-thirds covered appliances or included them in larger loans. Interesting was the fact that since the beginning of such loans, of the total only three were delinquent. No repossessions have been made and only three were considered slow accounts. Mr. Chamberlain advocates that more emphasis be placed on combinations of appliances, which are possible under the plan, with low payments applying on the total.

Memories of the exquisite lighting at San Diego's fair will affect lighting practice long after the fair closes this month



Main floor of Lachman Bros., San Francisco, was turned over to the appliance exposition

Home Exposition Peps Summer Season Sales

WHAT would ordinarily be considered one of the quietest months in the furniture business was made a period of productive activity by Lachman Bros., a San Francisco furniture store, recently in cooperation with the Electrical Appliance Society of Northern California. A home electrical exposition was staged by the store. An advertisement approximately a page in size broke the news to the public and enumerated some of the advantages offered in electrical appliances, told of lectures on home economics, demonstrations of food preparation, displays of correct table settings for home entertaining, and of complete exhibits of the most recent innovations in electrical conveniences. Special stress was placed upon the benefits to be derived from advice of many home making experts who had been assembled at the store for the week.

To get immediate and large attendance even on the opening day a series of special electrical appliance prizes was offered. These prizes, totalling some $500 in value, ranged from a large size Westinghouse refrigerator to electric waffle irons and toasters. Two prizes were awarded each day, the major prizes being held for the final day in order to sustain interest.

Special window displays of the prizes, as well as major window displays of refrigerators and washing machines and ironers, emphasized the importance of the exposition to all passers-by. Radio announcements and daily advertisements kept the event constantly before the public.

Inside the store practically the entire main floor was devoted to the displays of various electrical appliances, a capable demonstrator in charge of each. All the leading lines were represented so that prospective purchasers had an opportunity to compare various styles and sizes.

Miss Bertha Mae Hixson, educational director of the Electrical Appliance Society of Northern California, was in charge of the exposition, personally supervising the arrangement of displays and the work of participants. Lachman Bros. demonstrators and sales women were directed by Miss Hixson in the showing of various appliances and in the presentation of classes in cooking and home making.

The proprietors of the store reported the entire week a splendid success both from the standpoint of sales and attendance. Hundreds of people registered every day, with a total attendance for the week running into the thousands. Each registration slip, besides the name and address, included a list of appliances possessed by the signer so that at the conclusion a fine list of prospects was recorded. The show was put on in the middle of the summer, an ordinarily dull period, and proved a fine stimulant of business during that period. It is a plan which could be imitated by many other home furnishings stores.

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Expositions Follow in Close Succession

ELECTRIC appliance expositions and weeks follow each other in rapid succession as many of the large department and furniture stores in northern California take advantage of the publicity and promotion of the Electric Appliance Society of Northern California; particularly the services of their two educational directors, Miss Bertha Hixson and Miss Gladys Byrne.

Some of the most recent of such electric appliance expositions and shows have been the Table Style Show and Appliance Exhibit conducted by Miss Byrne at Weinstock-Lubin Co., Sacramento, which Mr. Ellis, general manager, said he felt was the most successful show ever put on. Every employee was given 25 invitational announcements every day and was instructed to hand these to customers. Four windows with electric appliances were displayed and shown the entire week. More people were brought to the second floor, where the show was held, than ever before in the history of the store.

An Electrical Appliance Show at Lachman Bros., San Francisco, was in charge of Miss Hixson. She conducted lectures and style shows each day. Demonstrations of appliances were given by a number of factory and store demonstrators.

The City of Paris, San Francisco, electrical department in Normandy Lane staged a week of demonstrations and hostess schools under Miss Hixson's direction.

Breuner's, Oakland store, staged a big gas and electrical appliance week early in October, over which Miss Byrne presided. Sixteen demonstrations were conducted during the entire time with special features every hour of the day. Free short wave messages were broadcast to anywhere in the United States. Door prizes were given away every day and night with a grand prize of a Philco Radio at the end of the week.

Another such show is planned by the Emporium in San Francisco in November.

One of the main display windows at Union Furniture Co., San Jose, during the electrical exposition staged there jointly by the manufacturers of appliances and the Electrical Appliance Society

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• ALMOST 900 ELECTRIC RANGES have been sold by dealers and the company salesmen of the Northwestern Electric Co. during the first eight months of 1935. More than 141 per cent of the quota for the entire year, or a total of 890 ranges, have been sold, according to James B. Buman, manager of the utilization bureau. The bogey for the year had been set at 630 ranges. Sales were almost three times those for the same period in 1934, when a total of 555 ranges were sold for the year.

Big Cooperative Program In So. California Planned

ONE of the first steps in the great promotional campaign which is being inaugurated in southern California under the sponsorship of the newly formed promotional and educational organization known as the "Electrical Development League of Southern California" was a big meeting of electrical contractors held at the Edison Co. auditorium in Los Angeles, Oct. 29. The new promotional organization is an outgrowth of the Los Angeles Electric Club whose purely social activities are to be supplemented by a business-building campaign under the guidance and stimulation of the newly formed league. Both Southern California Edison Co. and the Los Angeles City Bureau of Power and Light, together with manufacturers, distributors and dealers and contractors are represented in the new organization.

The contractors' special meeting was presided over by A. L. Stone, president of the Los Angeles Branch, Southern California Chapter, N.E.C.A., who is also the treasurer of the new league.

The big meeting of contractors was called to dramatize the Boulder Dam power situation and to point its opportunities to contractors. Bruce Findlay gave a talk on the coming power era, which was followed by a moving picture showing the construction of Boulder Dam. This was followed by a talk and discussion by H. H. Cox, of the Bureau of Power and Light, on the changing of frequency from 50 to 60 cycles and what this shall mean in extra business for the contractor.

President Stone then spoke on several contractor problems such as the shortage of labor, the opportunities presented under the new program of cooperation with other branches of the industry. Dr. Frank Warren closed the meeting with an inspirational talk on the power of organization.

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Electric Club Expands With "Opportunity" Program

Planning to announce its enlarged promotional activity at the Nov. 4 meeting, the Los Angeles Electric Club the program has titled the movement that of launching of "Opportunity Year." B. F. Woodard, President of the Club extended invitations to people in all branches of the industry in southern California to attend and participate. He was to speak on "The League's Development". M. G. Sues, elected president of the new League, was to talk on "Organization and Objectives of the League."

"The program as laid out, is practical and has been set up so that there is direct benefit to every member of the industry," declared President Woodard in his invitation. The meeting was to be held at the Biltmore Ballroom at noon, Monday, Nov. 4. F. L. Hockensmith has been chosen to head up and direct the activities of "Opportunity Year" program whose purpose is that of selling of Boulder Dam power. He was to be introduced to the industry at that time.

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• STILL HAMMERING away at water heating in its advertising, the Los Angeles Bureau of Power and Light is planning to feature electric range advertising again during the fall and winter. Since it makes no sales itself, but has a crew of salesmen who help dealers make sales of ranges and water heaters, this advertising will be particularly beneficial to all cooperating dealers in the Los Angeles area, according to Chet Dye, who supervises such selling.

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Contra Costa Dealers Stage Exposition

AN outstanding example of dealer and utility cooperation was displayed at the Contra Costa Electrical Exposition and Cooking School, conducted by Mrs. Abbie V. Farnsworth, home economist of the Pacific Gas and Electric Co., who collaborated with the electrical dealers of Contra Costa County in planning the affair.

The occasion took place at the Masonic Temple in Concord Sept. 19 and 20. In addition to the demonstration in modern electric cookery by Mrs. Farnsworth, ten dealers of Contra Costa County presented comprehensive displays of ranges, refrigerators, ironing machines, washers, radios, cleaners and the latest in table appliances.

Those participating were:

Garrow Home Furnishers	Antioch
Claxton White	Pittsburg
Alhambra Electric	Martinez
Homer Grider	Martinez and Concord
Concord Electric Co.	Concord
E. E. Ulrich	Martinez and Walnut Creek
P. L. Keller Co.	Concord
Graham Hardware Co.	Concord
Earl Radio	Concord
T. E. Kitchen	Walnut Creek

The attendance of close to 900 was a record for this kind of affair in Contra Costa. Visitors were attentive, interested, and in many cases enthusiastic over the opportunities to see such a varied display right near home, and to get the latest developments on modern cookery.

The exposition was organized by C. A. Karling, P. G. & E. agent at Walnut Creek and Concord, whose efforts contributed largely to the success of the affair.

The dealers report excellent results and plan to make it a regular event.

Cooking classes at the Contra Costa dealers exposition in Concord drew large crowds

Light and Vision Institute Launches Booklet

By FRANK A. HANSEN*
Director, The Western Institute of Light and Vision, Los Angeles

THAT we as an industry have largely been neglecting the immense home lighting field is a recognized fact. Basically, the reason for this is the comparatively small unit of sale, either for the manufacturer or the utility.

Both the lighting equipment manufacturer and the lighting service department of the utility could well afford to render real service on a large commercial or industrial project, or a chain of small establishments under one centralized management. But when it came to the home—the amount of equipment and the load involved did not economically warrant individual attention.

It was small wonder then, that authentic surveys have shown 99 per cent of the homes in America to be inadequately lighted. We know how to light a home correctly, and we know that we are doing a genuine welfare service every time we do light one correctly. More than that, we realize that a well lighted home is the strongest lesson in good lighting for the street, the school, the office or the place of work. The home is still the fountain head of comparison.

The Story of Seeing

Both light and eyes are necessary to sight, and it is around this thought that the new Science of Seeing is built. Without a doubt it is the finest approach to the promotion of adequate lighting yet conceived; for here the coordination of the illuminating engineer and the eyesight specialist mutually support each other.

It does not need a psychologist to recall to our minds that, during the recently painful period of economic stress, we went right on doing the things we wanted to do. We attended games and races by the millions and did not stop buying all kinds of alleged "luxuries." Wherever our personal well-being was concerned, we went the limit to provide it.

So it is with the presentation of adequate lighting from the "seeing" viewpoint. The truth is that when our lighting is inadequate, our eyes are in danger. And when we realize this, we see to it from that time on that our illumination is adequate, and that our eyes are under no strain.

The eyesight specialist is glad to cooperate in getting this message to his patient. Past experiences have shown him that the patient may go out perfectly fitted with corrective lenses and then complain that he does not see properly, and often it is because his lighting is wrong. The success of the eyesight specialist rests on his ability to give comfortable vision; and this explains his keen interest in knowing that the patient has the best of visual conditions.

These facts account for the success of the "Light for Seeing" programs since their inception a couple of years back. Those utilities and people of the trade generally who have sold light by first telling the Story of Seeing are being well repaid for their effort. The customer religiously keeps his illumination at the required level when he realizes that his eyes are in danger if he fails to do so.

The Institute of Light and Vision

Like other parts of the country, we southern California lighting men have been working along with this idea. For years a number of us have co-ordinated a good deal of our educational efforts with those of the optical professions.

Some eight months ago however, the Southern California Section, Illuminating Engineering Society, definitely set out to develop a program which would systematize our efforts in this direction.

During the planning period several months were spent in discussion with all groups and in correspondence to learn the experience of others.

Then came the organization of the institute and the obtaining of support for it, both moral and financial, from the variously interested groups or individuals.

The Booklet Seeing

One of the first requirements of a broad educational program of this nature was to have a suitable booklet for distribution. A long search was conducted to find something that met all the requirements;and when this search failed, we prepared the booklet "Seeing—A Guide to the Best Use and Care of the Eyes."

In this we wished to make a presentation of the subject that would be easily readable for both city and rural readers of all ages; that would tell the story of each interested group yet cause no controversy; that would not be "high-powered" advertising and that would have value enough to be kept in the home. The distribution was to be by direct mail, in person, at lectures of all types and by eyesight specialists, electrical utilities, manufacturers of optical and electrical equipment, manufacturers of glass, window shades and paint; together with the dealers of such products. For, after all, they all were interested in telling the lighting story.

We adopted the magazine idea for this presentation, each page telling its own complete story, yet continuous in thought if read from beginning to end. This plan was adopted after the success of a utility advertising campaign put on in very much the same manner, as it provided coverage and interests for all sorts of readers.

When the writing of the booklet was finished, there had been pieces of reference material used, ranging from text books to previews of Saturday Evening Post advertisements. Advertising men, eyesight specialists, illuminating engineers, medical men, university professors and others, totaling about forty, all had a hand in it. Organizations such as General Electric, Westinghouse, Better Vision Institute, Sight-Light Corp., and numerous others assisted us generously.

When the booklet was completed, after about six months of effort, we determined to test it out by getting the reaction of people in all walks of life. Accordingly, we mailed 100 copies to universities, central station illuminating engineers, executives and others, whose criticism we valued. Fifty more

*Until a recent illness, from which he has now fully recovered, Mr. Hansen was connected with the Holophane Co. in southern California. He has written many articles for Electrical West, Western City, and other publications, and conducted or taught in a number of lighting schools.

were carefully distributed to housewives and others, to get a complete cross section reaction from the intended readers. More than 150 test-read by school students of various ages, from twelve years up, each reporting "What I Liked Best" and "What I Do Not Understand." Then without books, they were asked to write what they had learned from reading this one.

From all these tests and comments we have revised the booklet which is now ready for distribution. It will be available to utilities, manufacturers and eye sight specialists for free, non-commercial distribution. From the reactions we have had unquestionable it will be very effective for use in the schools, particularly the upper grades. A choice of 40 pages is offered, so that a 32 or 36 page booklet may be assembled to fit individual conditions in any section of the country.

Our Program This Year

We have secured 200 copies of "Seeing and Human Welfare," by Dr. Luckiesh, which we are distributing as gifts to the libraries. As this is written, we are arranging for a number of lectures to be given by the members of this Institute to the Parent-Teacher Associations, luncheon clubs, church groups, and so on. Our large speaker's committee is made up mostly of eye sight specialists, together with a number of utility lighting service department men, illuminating engineers and manufacturer's representatives. No speaker, while representative of this Institute, may enter into any controversial discussion, but must confine himself to the straightforward telling of the formula —"good eyes plus good light equals good sight."

Members

Annual membership in this Institute by individuals costs $2.50 per year. Members are supplied with a plaque and receive regular bulletins, mimeographed suggestions for Light and Vision talks and a reduced price on Institute literature. A series of educational lectures for the express benefit of the Institute members is also proposed on this year's program.

Other parts of the program under consideration include contests and wide spread publicity.

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Testimonial Broadside For Dealers Furnished

Designed to be used by dealers and sent by them to their own mailing list is a new range testimonial broadside prepared by the advertising department of Southern California Edison Company, Ltd. Sample copies of the broadside were sent to each dealer representative in sufficient quantity to provide each dealer with copy from which he could order.

The broadsides were furnished to the dealers for the price of the postage alone. Dealers were urged to place inside the mailing envelope a piece of their own or their manufacturer's product advertising material, since the broadside itself only sells the general idea of electric cookery.

Very strong was the message contained in the broadside. Pictures and letters of users of electric ranges, each one bringing out a definite sales point, were featured, with a summary of ten points upon which the electric range is being sold. Stress is laid on the fact that every day in the Edison territory 360,000 meals are cooked on electric ranges.

When a dealer buys ranges and sells them by the carload it is news worth talking about. The picture above shows Frank Koch, manager of General Electric Supply Corp., Fresno, unloading a carload of ranges for his dealer, the Linder Hardware Co., of Tulare. The ranges were sold in the "Cool Kitchen Contest" run by the Hotpoint range franchised dealers in the San Joaquin Division of Southern California Edison Co

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Electric Care of Children Extolled in Magazine

Featuring electricity for the care of children, the November issue of "Electrical Times," published by the advertising department of the Southern California Edison Co., Los Angeles, should do a thorough job of interesting the several hundred thousands of consumers of the company in electrical devices for the home.

Listed and described are night lights, clothes driers, heating pads, portable heaters, sun lamps, bottle warmers, heated cabinets for keeping baby's garments warm, electrically driven rocking horses and cribs, bottle sterilizers, cooker pots for preparing food, lighting, etc. The agricultural page takes up the subject of incubating baby chicks by electricity. The commercial page deals with the necessity of good lighting in schools.

Circulated to all of the customers of the Edison company, this pamphlet serves to build up customer acceptance for the lines handled by dealers. throughout the territory.

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Edison's Manual Has All the Answers

An electric range and water heater manual which gives in question and answer form all of the cooking and selling points relative to electric ranges and water heaters has been prepared by the Southern California Edison Co., Ltd., for use of cooperating dealers and dealer salesmen. An attractively bound booklet of 24 pages, a clever fold in the back cover allows the insertion of a small pamphlet giving specific data as to wiring and trade-in allowances; another pamphlet explaining the domestic rates and their applications.

The domestic rate pamphlet contains an ingenious table which in one column lists various typical numbers of kilowatt-hours and next to these the cost under the ordinary lighting rate. In three more columns, respectively, for a small family, medium family and large family, the average total bill for a range in addition to lighting is given. In three more tables representing again small, medium and large families, the average bill for the same amount of domestic lighting but with a water heater and range is given.

The manual itself, prepared under the direction of Henry C. Rice, merchandise manager, first lists the ten advantages which an electric range offers the customer over other types of cooking. These are given in the following order: "Dependable, fast, time saving, economical, healthful, cool, clean, modern, durable and tastier foods."

Another important table in the book is one showing a comparison in the shrinkage of meat cooked in an electric and in a fuel oven both at constant temperatures and at searing temperatures followed by a medium high temperature for a definite period of time. Shrinkage is shown to be but 11 per cent with the electric as against 24 by the other method.

The last few pages of the book are devoted to water heater questions and answers.

In releasing it to dealers, Mr. Rice pointed out that the booklet was not designed for direct use with a customer but rather to inform the dealer completely so that he can meet the objections or questions in his own language. Dealer salesmen who are using these books have declared them valuable selling tools.

List Water Heater Facts in Selling Manual

In a compact, pocket-sized booklet, the Puget Sound Power & Light Co. has prepared a useful looseleaf manual on automatic electric water heating already in its third edition and which can be revised from time to time. It is for use by salesmen and dealers. It gives all pertinent information relative to water heaters that any salesman might need. The booklet contains a foreword describing its use, followed by the water heating rate schedule applying on the off-peak water heaters of the storage tank type.

Particularly good is a list of facts to be observed in considering water heater equipment. This is to be used to estimate correctly the tank size needed to give satisfaction. Listed are these items: (1) Number of persons to be served, adults, children—ages, servants; (2) number of hot water outlets, showers, bath tubs—size, faucets (excluding bath and shower); (3) is washing done at home; if so, by machine or by hand? (4) number of baths per week, shower, tub, number of consecutive baths; (5) number of feet of hot water pipe, covered—description of covering, uncovered pipe—are outlets fed with uncovered pipe in frequent use?—size of pipe; (6) is present system circulating or non-circulating? (7) are there any abnormal uses of hot water? (8) where will equipment be located? Survey sheets to gather this material have been prepared and are required of dealers before installation is made. The back part of the manual is made up of diagrams showing service wiring, plumbing connections, locations of heater inserts, standard heater details, installation of tempering tanks, built up side arm assembly, and use of a tempering tank on the floor above. A table of draw-offs based on the N.E.M.A. schedule completes the book.

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Ad Campaign Replaces Denver Radio Show

Instead of staging a radio show, which was scheduled early this year, Denver radio dealers cooperated in an intensive advertising campaign, Sept. 29 to Oct. 5, carrying the message "Reach For The Joy of Living With a Modern, All-Wave Radio," to the public by means of newspaper display space, radio broadcasts and window posters.

Sixty-six firms, including thirteen distributors, participated. Though definite figures on sales achievements have not been compiled, a most gratifying volume of business was reported immediately following the one-week activity. Several instances of all-time sales records being broken were cited by Electrical League of Colorado, which promoted the movement. Testimony that results of the experiment were satisfactory to the cooperators is seen in the circumstances that it will be duplicated next year.

Continuing the good work started, Scott Brothers Electric Co. held a "one man" Radio Show, October 9-12 inclusive, exhibiting and demonstrating new models of Fairbanks Morse, Philco, R.C.A. Victor and Stromberg-Carlson, attracting large crowds of people whose interest had been aroused by the preceding week's publicity.

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Utah Utility Advertises Air Conditioning for Trade

In order to stimulate appreciation of the business building possibilities of air conditioning the Utah Power & Light Co. has inaugurated an advertising campaign consisting of a series of five mailing pieces sent to a large list of commercial customers. Surveys of premises are offered.

The data for the survey forms are being prepared in collaboration with local representatives of air conditioning dealers. Surveys are made impartially, more as a matter of information and to stimulate interest on the part of prospective users. This leaves the actual sale to the representative of a particular line.

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Phoenix Unites to Fill Empty Sockets

October was Better Light month in Phoenix, Ariz., as the result of a spectacular cooperative sales campaign on Mazda lamps sponsored jointly by dealers and the Central Arizona Light & Power Co. The object of the campaign was to refill empty sockets, increase wattage where it has been cut down in lamp fixtures and especially to sell spare lamps by the carton. The carton in this case was a unit of six 100-watt lamps.

A contest was run in connection with the program in which customers could compete for valuable prizes. With each carton of lamps purchased from a dealer an entry blank with rules and regulations was provided. A list of errors found in a large picture on the contest carton was the basis for the contest.

An extensive advertising campaign in the two local newspapers, together with half-hour and 15-min. periods over the two radio stations, and a display of lighting at the Modern Home Show backed up the contest.

In order to participate, the dealers only had to use a contest carton for the delivery of lamps. It was advised, however, to make ample lamp display, ask customers to buy, to use tie-in newspaper advertising, make displays in windows and store, use radio plugs and generally advertise the campaign.

Further inducement was offered dealers as prizes of floor lamps and study lamps to the employees of the dealers who sold the most wattage.

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Ad Bonus Offered Tucson Dealers

A dealer bonus specifically given to assist them to do advertising of ranges, refrigerators and water heaters is being offered the dealers in Tucson by the Tucson Gas, Electric Light & Power Co. An allowance of $2 on refrigerators, $3 on ranges and $5 on a water heater is being made to dealers. Dealers in turn must do advertising in conjunction with these lines. Air conditioning sales are given a $5 bonus and rentals $2.50.

A recent survey of 1,800 rural customers indicated a saturation of 49 per cent in electric refrigerators, 15 per cent in ranges and 8 per cent in water heaters, all of which is considerably above the national average. The company also makes an allowance to dealers for range wiring of $15. A water heater is also allowed this amount, or $20 for both together. The average cost of installation is estimated around $30, which makes this offering a considerable proportion of the range wiring cost.

During the survey many consumers were sold the idea of further appliances and a number of good prospects were obtained and released to local electric dealers for further contact, according to W. H. Howe, manager of the commercial department.

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Household Hint Book To be Prepared

With a "Household Hint Contest" May Layton, home economist of the Valley Electrical Supply Co., Fresno, has been conducting a series of radio programs on station KMA Tuesday and Thursday mornings. The feature of the contest is the payment of a dollar prize for each one of the hints received and use. Women are invited to send in their choice of home hints. These are to be passed upon by experienced judges. Those selected for the program are to be printed in a booklet when the series is completed and a copy of the booklet sent to each person submitting one or more hints.

The idea has taken hold rapidly and

a large number of letters are being received. The compilation of home hints promises to be a valuable addition to any home keeper's library.

In addition to the contest programs talks on subjects of interest to home keepers are given. Entertaining, canning, food selection, cookery, and serving are among the subjects discussed.

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• DEALERS OF PHOENIX, Ariz., and the utility, Central Arizona Light & Power Co., combined in an automatic electric roaster campaign early this year which resulted in a large number of sales. Both the 6- and 12-qt. sizes were featured.

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• THE SALES OF ELECTRIC RANGES in the Portland district have more than doubled those of last year for the first eight months of 1935. Over 3,000 ranges have been sold by both dealers and utilities for both the utility systems there. Refrigerator sales also showed a gain of 35 per cent over the same period of last year, with a total for the eight months of 3,720 units.

Lamp Jobbers Given Big Mazda Show

"THE Big Show," an exhibition of sales and promotion on Mazda lamps, was presented by the Pacific Division, Incandescent Lamp Department of General Electric Co., in San Francisco to its lamp wholesalers early last month. Using the circus theme, several stunts and acts were put on to illustrate the market possibilities for Mazda lamps.

First speaker was Morris Hixson, division manager, who pointed to business indexes which indicate improved business conditions. Leo G. Gianini next gave a demonstration of light sources and new selling tools, such as the sight meter and visibility meter. He demonstrated I.E.S. lamps, plus lamps, inbuilt lighting, and high intensity mercury vapor lighting in combination with incandescent lamps.

A spectacular fluorescent effect was staged by Mr. Switzer, of the Luminous Products Co., Berkeley, after which it was stated experiments at Nela Park with fluorescent material may result in new light sources, using mercury or other gases for luminescent and fluorescent materials for correcting color values. Mr. Gianini also displayed units designed for tops of cases, and wall brackets for commercial uses. He displayed a new bowl silvered lamp and the Lumiline lamps in use.

Walter E. Carlson talked on the matter of window displays, interior displays, advertising in national magazines and the necessity for stimulating buying by the customer. Mr. Hixson closed the meeting with a summary of the principles of merchandising.

Others in the cast were W. J. Ashton, C. P. Wallis, C. D. Sawyer, A. E. Longmate, F. A. Kirchner, Miss M. R. Temperley and Miss Ione Hanson.

A similar series of meetings was held by Messrs. Carlson and Gianini at a number of cities in northern California for dealers — even the public. The first such program was staged some months ago at Reno, Nev. The big dealer meeting in Watsonville was the next with a large attendance from the whole region, including Hollister and Salinas. Similar meetings were held in Stockton, Sacramento; and elsewhere.

DEALER SALES REPORTS—AUGUST-SEPTEMBER 1935

A Summary of the Dealer Reports Compiled by Associations, Societies, or Bureaus, or Dealer Contact Departments of Utilities

APPLIANCE	P. G. & E. Co.[1]		San Diego Cons. G. & E. Co.[2]		San Joaquin Lt. & P. Corp.[3]		So. Calif. Edison Co., Ltd.[4]		Utah Power & Lt. Co.[5]		Wash. Water Power Co.[6]		Idaho Power Co.[7]	
	*August 1935	9 Mos. Dec.-Aug.	September 1935	Year to date	September 1935	Year to date	September 1935	Year to date	September 1935	Year to date	*Sept. 1935	Year to date	September 1935	Year to date
Ranges	309	2,326	36	246	106	1,151	434	4,197	144	1,501	.....	.....	226	2,240
Water Heaters	199	1,785	29	325	52	554	218	2,267	31	371	.....	.....	.....	.....
Air Heaters—aux.	164	3,490	20	563	.....	52	78	702	.....	.....	.....	.....	19	116
Air Heaters, 220	59	537	.....	.....	39	419	.....	.....	.....	.....	.....	.....	.....	.....
Refrigerators	4,002	30,724	604	4,983	221	5,482	3,318	29,724	363	6,753	.....	.....	269	5,245
Dishwashers	9	73	.....	.....	.....	15	.....	.....	1	3	.....	.....	.....	2
Washers	3,073	21,164	350	2,520	341	2,843	2,851	21,641	762	6,750	.....	.....	495	3,491
Ironers	925	6,297	99	479	72	522	607	3,587	34	321	.....	.....	45	340
Vac. Cleaners	1,756	15,805	191	1,247	67	676	1,028	7,729	458	3,795	.....	.....	45	646
Radios	6,020	48,576	898	6,923	530	4,583	4,464	33,166	1,321	6,947	.....	.....	414	2,478
Mixers	716	3,926	58	510	54	639	386	3,174	421	1,847	.....	.....	52	437
Cookers, Casseroles	.....	.....	34	212	13	151	62	410	16	311	.....	.....	.....	47
Irons	.....	.....	320	2,386	402	2,963	1,560	11,660	1,277	8,193	.....	.....	389	2,893
Waffle Irons	.....	.....	125	1,122	108	879	438	3,428	255	1,972	.....	.....	82	703
Toasters	.....	.....	166	1,540	133	1,051	600	4,939	628	3,752	.....	.....	167	1,096
Table Stoves, etc.	.....	.....	62	423	161	1,089	232	2,278	729	5,497	.....	.....	207	1,742
Heating Pads	.....	.....	49	488	.....	.....	155	1,388	485	1,455	.....	.....	21	195
Curling Irons	.....	.....	.....	.....	.....	.....	87	561	258	1,979	.....	.....	.....	.....
Coffee Makers	.....	.....	137	1,000	99	825	389	3,052	410	2,714	.....	.....	130	996
Sewing Machines	1,213	10,146	17	160	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Clocks	.....	.....	.....	.....	83	751	360	3,124	383	1,972	.....	.....	19	216
Fans	.....	.....	.....	.....	.....	.....	200	2,762	.....	.....	.....	.....	28	883
Floor Polishers	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Sun Lamps	.....	.....	.....	.....	.....	15	14	229	2	49	.....	.....	4	123
Reflector Lamps	.....	.....	.....	.....	88	700	.....	.....	611	5,143	.....	.....	84	1,142
Misc. Lamps	.....	.....	.....	.....	.....	.....	.....	.....	1,327	7,725	.....	.....	266	3,676
Yard Lights	.....	.....	.....	.....	52	440	.....	.....	.....	.....	.....	.....	.....	.....
Misc. Small Appl.	.....	.....	150	1,868	200	1,778	582	4,081	14	127	.....	.....	.....	.....
Total Dealers	.....	1,400	.....	.....	.....	.....	583	583	.....	.....	.....	.....	.....	200
No. Reporting	.....	.....	.....	.....	129	117†	497	502†	.....	.....	.....	.....	.....	130

* September Report was not available at time of going to press. † Arithmetical average number of dealers reporting since first of the year.

[1] P. G. and E. reports obtained only on major appliances upon which accurate reports are available from dealers' accounts. Ranges, water heaters, and air heaters include company and dealer sales. Total dealers include gas as well as electric dealers. First report of year 1935 starts with Dec., 1934, and will be cumulative from that month.

[2] Gathered by Bureau of Radio and Electric Appliances of San Diego County. Clocks, fans included under miscellaneous.

[3] Includes dealer reports from Midland Counties Public Service Corp. territory also. Compiled by Valley Electrical Supply Co.

[4] Includes reports from dealers on San Joaquin Valley system of the company as well as Southern California areas served. Comparative figures of same month last year indicates improvement.

[5] Includes Utah Power & Light Co. territory in Utah, Idaho and Wyoming. Also Western Colorado Power Co. territory. Dollar value of appliance sales in June, 1935, is over 300,000 ahead of sales in June, 1934.

[6] Dealer sales only for Spokane and company's territory. Company sales not included. Table stoves, grills included with cookers.

[7] Figures compiled by Electrical Equipment Sales Association. Include power company sales and sales of all reporting dealers—about 60% report.

EDITORIAL + + +

Trolley Coaches—Load Retainers

INAUGURATION last month of trolley coach service in San Francisco by the Market Street Railway Co. again focuses attention on the increasingly competitive phases of the electric light and power industry. Until a few years ago street cars were the accepted form of mass transportation in the towns and cities of the country. They represented an appreciable and desirable electrical load for central station companies. Then real competition for the nickels and dimes of the urban rider appeared. At first it was the wildcat "jitney" operator, but he was soon followed by the converted motor truck and finally by the luxurious motor bus designed especially for short haul passenger traffic. The private automobile also depleted the ranks of the regular street car rider.

All this time the electric transportation companies were confronted with decreasing revenues which made it difficult to finance new, modern equipment that would recapture its dominant position. Taxes, street maintenance costs, franchise charges incident to maintenance and operation of tracks, cars and other facilities were mounting so rapidly that many companies abandoned the trolley car and adopted the gasoline propelled bus. Illustrative of this is the situation in one California city where the street railway power load is now less than ten per cent of its peak due to the substitution of busses for trolley cars. This is a direct loss in revenue not only to the electrical utility serving the transportation company but a loss in profit to other branches of the industry that furnish equipment and supplies for operation.

Fortunately progressive traction and electrical manufacturing executives refused to capitulate to this competition without a struggle. They studied the possibilities of providing a vehicle that would retain all of the good features of electrical operation and incorporate the flexibility, ease of operation and traffic adaptability of the motor bus. The result is the trolley coach, a vehicle that relies upon central station service to permit rapid acceleration, fast schedule speeds, clean, quiet operation without fumes or soot. From the bus it took maneuverability, the safety and convenience of curb loading, the comfortable riding qualities of pneumatic tires and the elimination of track maintenance expense for its operators. Wherever it has been tried the trolley coach has enjoyed a public acceptance, indicated by increased revenues, that has been accorded no other form of transportation.

The popularity of the two trolley coach installations in the West (San Francisco and Salt Lake City) as well as the enthusiastic reports of eastern operators of this new vehicle suggest that the transportation companies of the Western cities can recapture their regular riders, the electrical utilities can regain a large block of load and the electrical industry as a whole retrieve a handsome volume of business in electrical apparatus, supplies and equipment if the industry will boost in unison the fast, clean, comfortable transportation provided by this ultra-modern vehicle.

Can We Be Sure of This?

NOT to nationalize but to de-nationalize the electrical industry, was declared the primary objective of the Public Utility Act of 1935 by Claude L. Draper, of Wyoming, member of the Federal Power Commission in his address before the convention of the National Association of Railroad and Utilities Commissioners. "It is to substitute genuine state control for that remote control which has been brought about by holding company leadership".

"The real issue", he said, "is not one of state versus federal sovereignty. It is one of the public interest versus private interests; the public interest represented by the state and nation and the private interest represented, in many instances, by the forces of greed and selfishness.

"I make bold to challenge the good faith of those interests that with their left hand pretend to defend the power of state regulation against so-called Federal encroachment, while with their right hand they attempt to strike down the power of state regulation, using as their weapon the plea of Federal constitutional authority. I risk the suggestion that the real concern of those interests is not the rights of the state; that their real purpose is to drive a wedge between the state and nation and to becloud the real issue in the public mind".

Mr. Draper went on to say that the new Act presumes the power industry to be primarily a local industry, that the control of the inter-state wholesale rates which are constitutionally beyond the power of the state is conferred upon the Federal Commission but that the Act orders the Commission to keep its hands off the local rate even where the energy locally distributed is subject to interstate commerce. He further stated that the purpose of the Act was to place at the disposal of the state commissions facts necessary to the discharge of their functions of control.

"We cannot safely assume that private power interests left to their own devices will be led by an invis-

ible hand to pursue only those policies that are dictated by engineering consideration and directed with a single eye to the public interest," the commissioner stated. And that "in the future the engineer, the inventor and the operator shall no longer be overwhelmed by the promoters and speculators, but will be free to apply their genius to achievements that will write a new and more inspiring chapter in American economic history."

The only problem that concerns the utilities is whether they in their turn can safely assume that governmental interests, left to their own devices, will be led by an invisible hand to pursue only those policies that are likewise dictated by engineering consideration and directed with a single eye to the public interest. If this assurance can be guaranteed the ultimate public interest shall be the single goal of both in truth as well as in theory.

P.C.E.A. Has a Problem Too

WHILE the Pacific Coast Electrical Association has proceeded upon the basis of seeking to bring solutions to the problems of the industry, the two conclaves held last month placed before that organization a major problem for it to face and solve itself. That problem may be summed up in one word—*action*. It was the industry itself which propounded this problem to the association more by inference than by direct injunction. Yet this restraint was one of formality only, for at least the most outspoken branch of the industry, the contractors, were ready to introduce a resolution calling for reorganization to provide some means to obtain action on the problems so well presented in the conclaves.

Nonetheless the procedure of the P. C. E. A. so far has been a sound one. It is important to know just what the problems are. That each branch of the industry has problems, plenty of them, was well demonstrated. That these problems interlace in ways that a hurt to one branch of the industry transmits itself to every other branch of the business, was also made exceptionally clear in the frank and forthright discussion which took place. That an understanding of the other fellow's problem should help in bringing about solutions—at least more tolerance and a respect for the difficulties and the sincerity of each other—is also a fact.

It is only with the means selected by the P. C. E. A. for finding the solution that the industry expressed impatience. As practical men the prospect of academic solutions which may never find their way into action did not hold sufficient lure to tempt them to write papers for the contest and be satisfied with a mere intellectual outpouring. They have lived with these problems too long, been irritated by them, wrestled with them as individuals or even as separate associations, and they know what they want—action.

But the problem facing the P. C. E. A. itself will call for the development of a method or a means to bring action into the situation and to produce what results are possible. If it is found that some of these problems are impossible of solution, that too should prove helpful in facing the reality, instead of indulging in wishes or grudges concerning the impossible. Just what that method or process shall be must be determined. But if the industry enters into that solution with as clear a purpose and as frank and straightforward a participation as characterized the P. C. E. A. conclave discussions, the association can meet the fullest potential of its opportunity to become just what it has set out to be, an all-industry forum and meeting ground.

A Utilization Problem

FORMAL dedication of Boulder Dam marked the initial harnessing of the Colorado River for the convenience and use of man. Potential source of water supply to fertile acres and future population, a potential destroyer through floods of the rich Imperial Valley, and a great source of hydroelectric power, the Colorado has challenged the imagination and engineering genius of the West for almost three decades. Its final control is an event of tremendous significance to the future of the Southwest.

By conserving and equalizing the flow of the river, engineers have made secure the future growth of a region extending from the Rockies to the Pacific. There will be no more water famines for the land already under cultivation. There will be assured irrigation water for added thousands of acres of arable land to be developed as the future dictates. Removed is the constant threat of destructive floods and the menace of silt deposits. And added to the extensive power resources of this region is a new supply of 900 million kw.-hr. per year.

This last fact is of vital importance to the electrical industry. It is at once a problem, a challenge and an opportunity. No one will benefit unless the power is sold and used. Adequate market development is essential. This means a coordinated industry, market studies, sales plans, and finally the building of community consciousness of the great asset that Boulder Dam with its water and power is to the entire region. With all these this region can become the most highly electrified area in the nation.

As an engineering achievement Boulder Dam bows to no other structure in the world. But surpassing its technical aspects is its potential usefulness to society as a bulwark that harnesses and controls a mighty river for the benefit of future generations.

Significant Trends + + +

[*Signposts which point the road to improved business or method, brief, pertinent, useful hints as to HOW someone has blazed a new trail*]

Trackless Trolleys Make Debut in San Francisco

Eight trackless trolley coaches have been placed in service by the Market Street Railway Company of San Francisco to replace street cars on the Eighteenth and Harrison Street lines of that company. This is the first permanent trackless trolley installation on the Pacific Coast. The substitution was caused by the widening of Harrison Street in order to provide a better traffic flow to and from the San Francisco-Oakland bridge approach, trackless trolleys being selected as best suited to meet the traffic and hilly conditions which will be encountered in the subject route.

The new vehicles are 32 ft. 11½ in. long over the bumpers and 31 ft. 3 in. long at the belt rail, with an extreme width of 100 in. The wheel base is 195¼ in. The bodies are streamlined in appearance with Market Street Railway Company safety "white fronts," light green sides and straw colored roofs. Seating capacity of the coaches is 37, seats being of the semi-bucket type, leather upholstered, upholstery being of Spanish green leather. Seating arrangement is such as to furnish wide aisles and wells to expedite passenger movement in and out of the coach, passengers boarding at the front and leaving at the side entrance. Through the use of special alloys and through unique design, the weight of the coach is 19,000 lb., or about one-half that of an average street car.

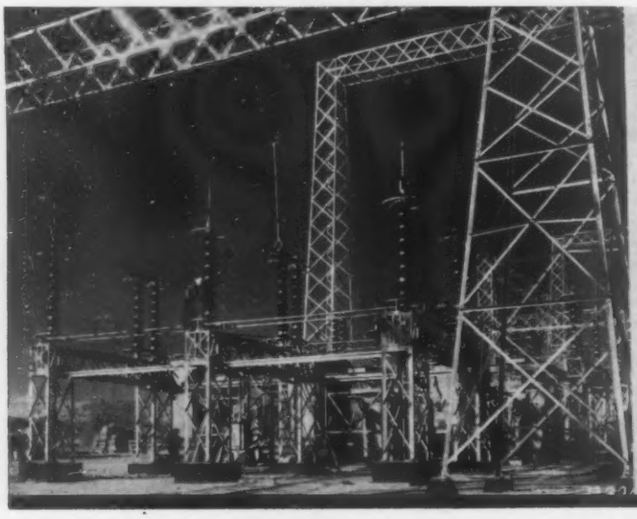
Innovations include an emergency control believed to be the first of its kind on trackless trolleys, insuring against accident if anything should happen to the operator. This device will bring the coach to a full stop and doors automatically will balance so that the passengers may leave the coach without the assistance of the operator. In addition to air brake equipment, a five-point dynamic holding brake limits the speed of the coaches to six miles per hour if desired while descending a 12 per cent grade. The coaches are powered by two 65 hp., 600 volt direct current light weight motors, geared to 37 miles per hour free running speed at full voltage. Power is transmitted to the rear axle by dual worm drive. Positive and complete air conditioning of the coaches is insured by eight roof ventilators together with one 12-in. exhaust fan driven by a 220-volt motor. These will provide ample change of air within the coach without causing drafts, insuring comfort for the passengers.

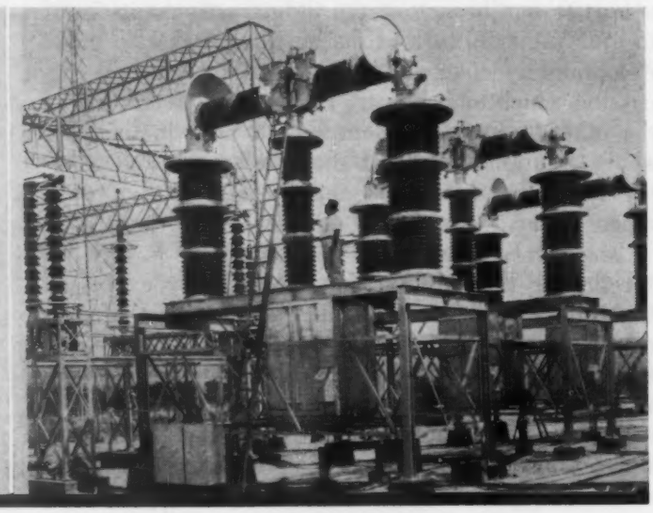
One of the new streamlined trackless trolley coaches of the Market Street Railway Co., San Francisco, which was placed in service during October

It is interesting to note that grades up to 12 per cent will be encountered. During the round trip of 9.86 miles, the coach is lifted a total of 743.4 ft. The longest continuous grade from Eighteenth and Guerrero Streets to Twin Peaks Boulevard and Clayton Street, a distance of 1.6 mi. includes

...in Engineering

Two views of the Victorville Switching station on the Los Angeles Bureau of Power and Light's Boulder Dam transmission line. At the left are shown the 287-kv. disconnecting switches and at the right the new type of 287-kv. oil circuit breakers which operate in less than 3 cycles





a lift of 431.2 ft.

The coaches were designed with a very short turning radius of 33 ft. This was made necessary because of the fact that at one point in the route, the direction of travel is reversed on a hairpin curve. They were constructed by the J. G. Brill Co. of Philadelphia upon specifications prepared jointly by the engineers of the Market Street Railway Co. and the Byllesby Engineering and Management Corp. Four of the new trolley coaches are powered with General Electric equipment and four with Westinghouse Electric & Mfg. Co. equipment.

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• AN ELECTRONIC TESTING DEVICE for checking the accuracy of watches has been installed by the Albert S. Samuels Co., San Francisco jewelers. The micrometer, manufactured by Henry Paulson & Co., Chicago, resembles a small radio set. A watch is placed on a sensitive microphone and its speed is checked against a standard, enabling the operator to adjust the watch in five minutes, a process which ordinarily takes several days for complete accuracy. Magnifying the sound of the operation of the watch also indicates any need for repairs, such as replacement of jewels, etc.

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...in the Motor Shop

Advises Caution in Motor Term Sales

R. O. Johnson, vice-president and manager of the Skeen Electric Works, Portland, has this to say about the reconditioned motor business:

"Any motor sold on a deferred payment plan is in effect a motor rented. Be careful, then, about three things. First, be sure, through personal calls upon others in the buyer's own line of business, or upon those from whom he buys, that his credit is good. I feel safer through this personal investigation than in placing confidence wholly in rating agencies.

"See that the down payment is sufficient to cover damage to the motor in case, after such damage, the buyer should fail to go on with his contract, and that money will not be lost on the deal.

"Finally, see that a conditional sales contract is made out in every case so that you are covered in the matter of title and possession until the contract is paid out. If this is neglected and perhaps left until some future date the result may be a loss in the case of even the best rated customers.

"While most reconditioned motors are sold outright or on a conditional sales contract, there are cases where the out-and-out rental may be profitable. For instance, in the nut and fruit growing business, motors are needed in the packing houses. Since these are closed and unguarded most of the year, the owners wish nothing of value left in them and would rather rent a motor for the packing season than to own it outright. With a rental rate placed proportionately high for this intermittent service, the straight rental may be made profitable."

Motorshop of Skeen Electric Works, Portland. R. O. Johnson, manager, is seen at left

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• UPON COMPLETION of the electric installation at the new Oakland plant of Standard Brands of California the Pacific Electric Motor Co., Oakland, issued a special number of its house organ "Industrial Electric News," in which was attractively displayed photographs of various features of the installation. Throughout, the installation was interpreted in terms of careful workmanship and high class installation work which this firm makes available to its industrial customers in the East Bay area.

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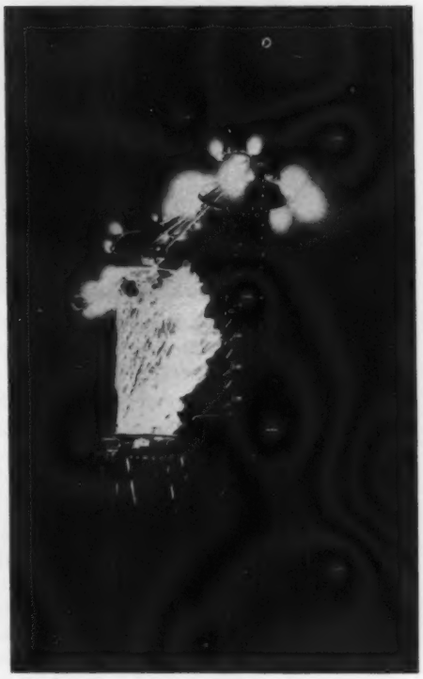
Trial by Arc



This photograph of the testing of the 287-kv. disconnecting switch units for Boulder Dam shows the arc established by a 850-kv. potential supplied by the facilities at the Ryan High Voltage Laboratory of Stanford University. Tests like these guarantee satisfactory performance of modern equipment under normal operating conditions

Welding Rig Proves a Profitable Tool

MOST useful and versatile machine and one which has brought a variety of uses and profits is a welding rig made by Walter Smith, of the Electric Motor Shop, Eureka, Calif. The rig is so arranged that it can be used either as a welding machine or as an independent lighting plant which can be rented out to parties or mountain resorts for special lighting, either by the season or for special occasions.

The rig is made up of a six-cylinder Chevrolet motor and chassis direct connected to an old telephone d.c. generator of 300-amp. capacity. By means of a double-throw switch and tap connections a 32-volt lighting system can be run from the rig.

Back of the generator, at the rear of the chassis, the leads are wound on spools with collector ring connection to the wiring system and control panel. The engine is fitted with an automatic control on the carburetor, consisting of a dash pot arrangement which idles down the engine when not under load. This saves gasoline and works automatically to open the throttle when a load is put on the line.

The housing was so arranged as to build in a fan to force the cooling air through the generator. The control panel is mounted on one side and has on it taps for various voltage set-ups and meters for regulation of voltage and amperage. When being towed to location a metal covering houses in the entire rig. In welding operations it is rented out to many of the lumber mills in the Eureka vicinity for repair work of one kind or another.

A portable welding rig that doubles as a lighting plant

...in Wiring Rules

Underwriters Laboratories Go on Field Tour

One of the traveling laboratories was fitted out by Underwriters' Laboratories and placed in service recently. These field laboratories will serve to acquaint electrical jobbers and dealers, as well as electrical inspection authorities, with the inspection and test work regularly undertaken by the inspectors of Underwriters' Laboratories at the factories of manufacturers subscribing to the label service.

The scope of the field laboratory work includes physical tests of rubber insulation, flame tests of flame-retarding finishes, copper sulphate tests of zinc coatings, tension tests, flexibility tests, etc. The equipment is such that it is possible to duplicate factory tests on rubber-covered wires and cords, rigid conduit, armored cable, flexible non-metallic tubing, etc.

Each laboratory will be in charge of and experienced inspector who will visit electrical jobbers, dealers, and retailers of electrical supplies to obtain representative samples of labeled products. The samples will be tested on or near the dealers' premises and the results reported to the manufacturers of the labeled goods. If a failure is obtained for any item of the specifications, another sample will be procured from the same coil or reel and forwarded to the Chicago Office of Underwriters' Laboratories for countercheck tests under standardized laboratory conditions.

Advantage will be taken of the opportunity afforded by these contacts with jobbers and dealers to obtain additional samples from their stocks of labeled materials for regular market sample counter-check tests at the Chicago testing station.

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© Supreme Court of California upheld the decision of the superior court in San Diego county in the Bellow case, awarding a judgment against a property owner for defective wiring installed without his knowledge by his tenant, which wiring caused the death of a plumber whose fish tape came in contact with a bare spot in an exposed cord carrying 115 volts. Appealed to the appellate court, the superior court was reversed, but carried to the state supreme court, the original decision was upheld. This case is considered an important precedent in fixing responsibility for hazardous wiring conditions.

Looking into the traveling laboratory which will be taken on tour by underwriters

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Northwest Inspectors Publish Safety Tract

A Safety Bulletin is published by the Northwestern Section, International Association of Electrical Inspectors, the first issue of which has just come from the press. It gives in concise terms practical advice for the safe handling of electricity by householders. Issued by the Inspectors Association, to consumers, its distribution is intended by members of the association or by the electrical industry.

The pamphlets are small and easily read and should receive wide distribution from all branches of the industry. The last page indicates that others of a similar nature will follow from time to time.

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Seattle Code Permits Four-Wire Circuits

An amendment to the Seattle Electrical Code to permit the use of a three-phase, four-wire star circuit has been adopted for the purpose of encouraging electrical modernization. The new regulation will permit the use of twelve outlets or the equivalent between any phase wire and the neutral.

Although this type of branch circuit is recognized in the National Electrical Code, the Seattle ordinance has gone somewhat further and has required the painting of phase wires at all outlets and panelboards so as to distinguish them easily. Thus a four-wire circuit will have the conventional white or natural grey grounded neutral with the other phase wires painted black, blue and red. The use of this circuit is restricted to all-metal enclosures and is not to be employed for knob and tube work.

The first building in Seattle to be wired under the new regulation will be the City Light Building.

...in Lighting

Paper Trial Lamps Give "Sample" of Light

Trial lamps, made of paper, serving as samples of Better Light-Better Sight I.E.S. study lamps have been designed as a selling tool by the Incandescent Lamp Department of the General Electric Co., Nela Park. The pasteboard counterpart of the I.E.S. lamp is sufficiently rugged to support a 100 watt Mazda lamp, socket and six foot extension cord. It is designed to withstand the rigors of at least a week's usage at various locations in the home

Quickly assembled paper lamp to test good light

where seeing tasks are performed. It is collapsible and requires but a few minutes to assemble.

It is especially intended for distribution by utility companies and may be delivered in person by utility home lighting specialists or given out at special home lighting meetings. The user, after having tried out the new lamp for several days will consign it to the wastebasket and hasten to purchase a genuine I.E.S. Better Sight Lamp, it is contended.

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Building Face Lifting Program Launched

Bringing together various groups and individuals interested in the subject of modernizing of buildings and building fronts is a new and informal organization known as the "Modernization for Profit Council," of which Clark Baker, Sr., has been elected president and which meets in San Francisco. Purposes of the organization are to prepare a program of education and promotion to be carried into various city commercial districts in the Bay region. Work of this council will be purely advisory and promotional, leaving to the interested groups and in-

dividuals the following up of leads and prospects for improvement either of a district or of an individual store.

At its last meeting, Oct. 23, it was decided that preparation of the program would continue for the balance of the year and that formal presentation of the idea by means of lectures or meetings to the various improvement associations or business men's clubs would be deferred until after the first of January.

Meanwhile, as an adjunct to the program, Mr. Baker is providing a lighting school to teach representatives of crafts other than electrical some of the fundamentals of lighting application. To attend this has been promised a large number of representatives of the various crafts interested in building modernization, architects, contractors, designers, etc. Seven sessions are to be held in San Francisco; the eighth a caravan to Stanford University lighting laboratory.

Committees set up to handle the contemplated work include a general committee to prepare facts for presentation to local business associations, a speakers committee, a photographic committee to provide pictures of before and after results in neighborhoods where building modernization has taken place, a committee on design, a publications committee to act as clearing house for various types of publications dealing with modernization and a finance committee to obtain information on methods of financing through banks or the Federal Housing Administration. A publicity committee was also added.

The program, according to Mr. Baker, is one which should result both in increased business possibilities for all of the construction groups who are engaged in modernization of store fronts and buildings as well as in beautification of the communities in which the work is undertaken.

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...in Construction

First San Francisco "New American Home"

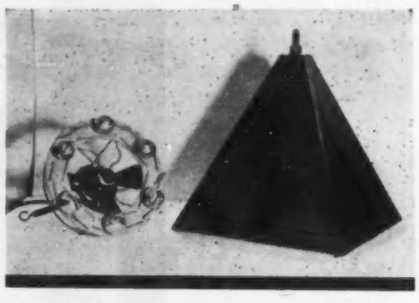
Announcement was made by Electric Appliances, Inc. of San Francisco, that the first "New American" home built and finished in San Francisco under the provisions of the recent contest among architects of America, would be opened to the public for inspection after Nov. 9, 1935.

The first home thus built is located at 91 Fernwood Dr., Monterey Heights, in San Francisco. Another home was scheduled to be finished in Berkeley, Calif., within a week or so of the first.

Sleigh Bells Replace Denver Traffic Gongs

The Electrical League of Colorado contributed a sleigh bell sound effect to traffic signals in the Denver business district during last Christmas season. On eight of the principal street intersections bells jingled whenever the light turned green. So cunningly was the device arranged that it gave an impression of horses (or maybe reindeer) trotting. And so well was it concealed among evergreen ropes, which spanned the street from curb to curb that only the initiated could discover it overhead, atop metal lamp standards.

So much favorable comment was aroused that George Bakewell, Jr. manager of the Electrical League, believes other electrical groups may want to pattern similar installations this year—and disclosed the simple secret of the "Santa's Sleigh Bell" installations. An electric fan was used, after one blade had been taken off and a weight attached to the opposite blade. The unbalanced action sent an intermittent breeze against the bells, which were sewn with rawhide on a leather belt covering the guard frame. Further irregularity to the silvery sound effect was achieved by a spring attached to a hook inside the metal housing from



Jingle bell device operated by traffic signal circuit. At left the mechanism, consisting of small electric fan, suspended from a spring, inside housing at right. Wire mesh grating prevented any parts from falling

which the device was suspended. To insure against the possibility that a bell might come loose and drop on somebody's head, a grating was placed across the bottom of the housing.

City officials gave their ready consent to the Electrical League's plan for synchronizing the "fan-fare" with traffic lights, and the hookup was made by city electricians under supervision of Chief Inspector John Malpiede, who is an enthusiastic League member.

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• MANUFACTURERS, contractors, dealers and utility power salesmen will find data in regard to the eligibility of electrical equipment and machinery under the $50,000 modernization credit plan of the Federal Housing Administration in a new booklet just released by FHA. Copies may be obtained from the FHA in Washington, D. C. and at state and district FHA offices.

•

...in Merchandising

Pickaninnies Demonstrate Toy Washer in Window

Using a miniature or baby A.B.C. washer, two little pickaninnies, one seven, the other five, working in the main street window of the Z.C.M.I., Salt Lake City, stopped traffic one busy Saturday between two and five p.m. to a continuous audience. Those little girls washed doll dresses, shirts, blankets, hose and real honest-to-goodness baby clothes.

A prize contest offering one of the baby washers as first prize and a laundry tub as second prize, with the offer of a case of laundry soap powder to every person sending in the name of a prospect who bought an A.B.C. machine, was an additional feature of the unusual promotion. The stunt resulted in the sale of many washers.

•

• DEALERS CAN MAKE GOOD USE of a fine series of articles on electrical appliances which have been running in the McCalls Magazine during the past several months. The group series is the result of the work of Arthur Hirose, formerly research man for McGraw-Hill Co., who is now director of the Research Department of The McCall Company. A series of articles written by prominent home economists of large utilities bring forth the customer values in each of the various types of appliances. The magazine reaches 2,300,000 families. McCalls also installed an all electric kitchen remodeled an old kitchen. It remodeled also an old laundry room. These were exhibited at the Industrial Arts Exposition in New York City and attracted widespread attention. Special attention was paid to the grouping of the various units in the kitchen by the McCall home economist.

•

• WESTINGHOUSE now manufactures its own dishwasher at its Mansfield plant, according to C. G. Hillier, manager of Dishwasher and Water Heater Sales Department. A feature of the Westinghouse dishwasher is that it is of front opening type, permitting additional work surface on the top.

Architect Selects Electric

• PERFECT HEATING, as well as the convenience which all of the appliances and lighting of an all-electric home bring, have been experienced by Harry N. Tyler, a retired architect of Los Gatos, in his own home. Mr. Tyler designed and personally supervised the construction of his own home. After very careful consideration of all heating systems, he chose electricity on account of its convenience, its cleanliness and safety. In order to make it feasible he also installed complete electrical equipment for every domestic use.

For example, he has an 8 kw. Hotpoint range, a 5 kw. Wesix water heater with an automatic load limiter, as well as lighting and miscellaneous appliances. The heaters consist of one 5 kw. and three 3 kw., three 1½ kw. and one 2 kw. automatic Wesix air heaters.

The cottage is a six-room house. It has two layers of roofing felt applied to serve as insulation. All hot water pipes are heavily insulated to insure retaining of the heat and good hot water at minimum cost. All heaters are equipped with built-in thermostats.

A statement of the year's bills on the DW-3 rate which includes heating, cooking, water heating, and miscellaneous uses, is given in the following table:

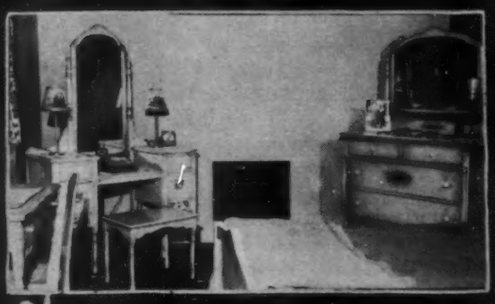
Jan. 27, 1934, to	KW Hrs.	
March 9, 1934	1300	$20.47
April 9	340	8.95
May 9	400	9.55
June 10	400	9.55
July 12	240	7.95
August 10	280	8.35
September 11	260	8.15
October 12	280	8.35
November 13	420	9.75
December 13	1100	16.55
January 15, 1935	1980	25.35
February 13	1760	23.15

In the planning of the home an estimate of $7.00 per month or $84.00 per year was given Mr. Tyler for air heating. He estimates, however, that it has cost him only $5.00 per month or $60.00 per year, which naturally is a source of satisfaction to him.

With his many years of experience behind him this architect has said of the heating system "for my use this is the most perfect heating system I have ever used. With intelligent operation, the flexibility of electric heating makes it far superior to any other form of heating."

A

B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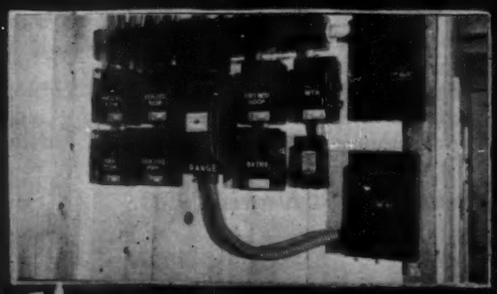
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In his own charming cottage Architect Tyler has chosen electrical means of heating and cooking. (A) The exterior of Mr. Tyler's Los Gatos home. (B) In the living room the air heater is mounted in the wall between the doors. (C) The bedrooms have the air heater installed as shown in this photo. Note too the generous use of lamps. (D) The breakfast nook heater. (E) The electric range in a kitchen alcove. (F) The bathroom heater. (G) Main panel board, showing a neat segregation of circuit control

Santa Cruz Contractor Has Bungalow Electric Shop

IN appearance a charming bungalow, and with an exterior store of unusual cheerfulness and charm, Irvin M. Smith, Santa Cruz electrical contractor-dealer, has about the prettiest electrical dealer's store anywhere in California. The new shop was designed by Mrs. Smith, who is an architect, and reflects a skillful knowledge of the art.

The exterior of the building is finished like a bungalow with large plate glass windows facing the street. These windows reach down to the floor and form a show window visible to passers-by, either on the sidewalk or by automobile on the street. Located just off the Soquel highway, at 9 Cayuga St., in a residential district just off a business zone, and floodlighted at night, the store is an attraction for miles around. In fact, Mr. Smith has been surprised at the number of visitors who come in, attracted by the sheer beauty of the place.

The interior is completely finished in knotted white pine which has been waxed and treated to preserve its natural white finish. This makes an ideal setting for the electrical appliances and the lighting fixtures which are on display.

The main display room is large and contains tables attractively covered with linen of colored patterns and corner cupboards containing crockery and appliances. Unique use is made of display on the floor itself, both in the window and at the rear of the main display room where clocks and small appliances are attractively arranged in tiers upon the floor.

Just off the main display room is a model kitchen in which is built-in and connected for use an electric range, a refrigerator, with a kitchen ventilating fan over the sink. A small breakfast nook is provided with table appliances. This serves not only for demonstrations of electric cooking but can be used by Mr. and Mrs. Smith for a noon luncheon when they wish to do so. Attractive fixtures appropriate to the surroundings are used in each of these rooms.

In another room is a fixture display. The walls of this room are being kept available as a small art gallery for the display of paintings by local artists. This will bring more traffic to the store and many people to view both the fixtures and the paintings on display.

Even the office is attractively finished in knotted pine. At the rear of the building is a large storeroom and shop with a driveway all the way around the building, and entrances at the rear.

The main display room is attractively lighted by decorative yet well designed ceiling fixtures hung from the beams. A series of Holophane window reflectors add a brilliant pool of light to the window area and provision is made at the corners of the rooms for colored floodlights to play across the interior at night. Another interesting electrical feature is that the front door is connected to door chimes which ring automatically upon the opening of the door to "welcome our guests," as Mr. Smith puts it.

Proudly displayed in the office Mr. Smith has the Mazda lamp award silver plaque which he won in 1934 for exceeding quota in lamp sales for his territory.

From the street the windows of this "bungalow" reveal an attractive array of appliances

Supply Firm Opens New Furniture Exchange Display

Joining an already large number of distributors having displays for the buyers of retail establishments in the Western Furniture Exchange, San Francisco, the Moore Electric Supply Co., a division of Herberts-Moore Machinery Co., of 550 Fifth St., San Francisco, opened an attractive and unusual display in that building just prior to the summer merchandise market. The company is distributor in northern California for Stewart-Warner radios and refrigerators, Proctor & Schwartz electrical appliances, National Union radio tubes, Haag washing machines, Westinghouse electrical appliances and several other lines.

The Moore Electric Supply Co. was organized over two years ago by the Herberts-Moore Machinery Co., a 20-year-old machinery firm, and has become an important factor in the wholesaling of appliances and wiring materials in northern California. R. C. Christiansen, formerly with Leo J. Meyberg Co., is sales manager with a crew of eight salesmen in the field. Charles E. Moore is president of the company and is assisted by Don Frew, manager of Moore Electric Supply.

Like a Spanish garden under the stars is the Moore Electric Supply display at the Western Furniture Exchange.

News of Note + + +

Mead Announces Plans For Central Valley Project

Plans recently announced by Dr. Elwood Mead, Commissioner of Reclammation, for the first year's work on the Central Valley project in California include the Contra Costa conduit and initial construction on both the Friant and Kennett dams. The Reclamation Bureau discarded its previous plans to build Friant dam, in conjunction with either the Madera and Friant-Kern canals or the Contra Costa conduit and a standby steam plant when President Roosevelt recently reduced the allotment for the California project from $20,000,000 to $15,000,000.

The basis on which the Bureau has decided to go ahead is satisfactory to the state of California, according to Dr. Mead. The Contra Costa conduit, to cost $2,500,000 will comprise a partially useful unit in advance of the completion of the dams and will supply fresh water from the San Joaquin river to the industrial cities on the south side of Suisun bay. It is expected that construction will start within sixty days.

Work will commence on Friant dam on the San Joaquin river as soon as rights of way can be obtained. The project will cost approximately $14,500,000 and it is probable that the major portion of this year's allotment will be spent on this unit. Initial work on Kennett dam will include foundations and diversion tunnels. This is the major structure in the Central Valley plan to bring the Sacramento river under control and regulate the flow of surplus water so as to permit diversion into the San Joaquin valley and will cost upwards of $50,000,000, exclusive of the power plant. This year's expenditure at Kennett probably will amount to $4,000,000 or $5,000,000. Relocating the Southern Pacific rail line is regarded as ill-advised until there is assurance that more money will be forthcoming to carry the project forward. Since the Reclamation Service is not in position to guarantee completion of a useful unit, the work on the several units to be undertaken will go forward without repayment contracts. Commissioner Mead does not anticipate any difficulty in negotiating such contracts when the Reclamation Service in able to carry the project on to completion.

Headquarters will be centrally located at Sacramento, with Walker R. Young, construction engineer on Boulder dam, in charge. The principal delay at present is lack of rights of way to be provided by the state. In addition to the $15,000,000 allotment from work relief funds, this year's Rivers & Harbors Act carried an authorization of $12,000,000 for flood control that, when appropriated, probably can be applied to the project as a whole.

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$4,500,000 Rate Cut Announced by P.G.&E.

Customers of all classes on the Pacific Gas and Electric Co.'s system will be benefited to the extent of $4,500,000 by new rate schedules filed by the company to take effect in January. Four million of the rate slash will apply to P. G. & E. customers and the balance to those on the San Joaquin Light and Power Co. and Midland Counties Public Service Corporation lines. Increased usage, economies due to refinancing and reduced operating expenses made the reductions possible according to the statement of P. M. Downing, vice-president and general manager of the utility, made in announcing the new low rate schedules.

The new domestic schedules, cutting the top rate in incorporated areas from 4.5 cents to 4 cents and reducing the rates in the second block from 3.5 cents to 2.5 cents, will result in a saving of approximately 11 per cent. For maximum users of 150 kw.-hrs. per month the saving will be over 20 per cent. In rural areas, the rates are also reduced ½-cent per kw-hr. for the first and second block of the rate. These new schedules will result in savings to domestic users of approximately $1,925,000 per year.

Commercial lighting customers will enjoy reductions between 9 and 10 per cent. Rate schedules have been simplified to permit a combination alternating current commercial lighting and industrial power rate which, in effect, eliminates the minimum demand charge for small power users by having this absorb the charges for lighting kw-hrs. Substantial reductions will be possible for most customers who can take advantage of the new schedule, the total savings for commercial and industrial customers being estimated at $1,000,000 annually.

Agricultural power customers also are benefited by the new schedule which incorporates a new form of minimum demand charge. The minimum charge now entitles the farm user to 150 kw.-hrs. of service per hp. installed. Users of less than 250 kw.-hrs. per horsepower installed will thereby obtain a 14 per cent reduction and users of more than that amount will save 25 cents per hp. of demand charges.

This is the third major reduction made by the Pacific Gas and Electric Company since 1928 and the new schedules give Northern California consumers energy at costs far below the national average and as low as any in the entire country. Approval of the new rates by the California Railroad Commission is expected at an early date.

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Spokane Gets P.W.A. Funds For Pumping Plant

Following the receipt of an announcement of a P.W.A. grant of $193,000, Alex Lindsay, superintendent of the Spokane city water department, announced that construction work will start immediately on a dam and hydroelectric pumping plant at the site of the present Upriver plant.

The city has available $500,000 of water department funds which will be added to the P.W.A. grant. The project involves the replacement of the present 45-year old crib dam with a new concrete dam, at a cost of $325,000; and the construction of a hydroelectric pumping plant to supplement the present facilities.

On Oct. 31, bids were opened on furnishing, supervising, installing three adjustable blade, propeller-type hydraulic turbines with governors and all necessary auxiliaries.

On November 7 bids were taken on three 1,625-kva. generators with exciters and thrust bearings; seven transformers; 15,000 volt, metal-clad oil circuit breakers; seven switchboard panels; three 25-kva. transformers, and miscellaneous control, indicating devices, wire, cable and conduit.

On November 14 bids will be opened on eight tainter gates 172x26 ft.; eight motor-driven tainter gate hoists for one 3-man manual traveling gantry crane; six vertical lift gates, 9½x18 ft.; six motor-driven lift gate hoists; 14,000 lb. of structural steel hoisting frames; motor-operated trash track rack and 19,000 lb. of steel trash racks.

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• Standard Oil Company of California will replace central station service at its Richmond, Calif., refinery with energy from a new steam-electric generating station. Company officials have announced that Stone & Webster, Inc., has been retained to plan and construct a new 40,000-kw. steam plant. An initial appropriation of $1,800,000 has been made for the expansion program.

Why THIS Universal Acceptance OF THE G-E M-20 DEMAND REGISTER

HOW THE M-20 SAVES TIME IN TESTING

Here is just one specific reason why the M-20 has proved popular. It is the unique, portable self-checking adapter for manual operation. With it you can make an overall "accuracy" test in about one minute. It is simple and saves time.

THE G-E Type M-20 demand register has now rounded out more than a full year's service. Favorable reports from many users, and the large number of repeat orders, are indicative of the widespread acceptance of this new register.

THE REASONS WHY

Here is a design that you can depend on for: Long life . . . Sustained Accuracy . . . Safety . . . Dependability . . . Convenience . . . and Flexibility of Application. These all mean dollars saved.

Combined with low first cost, low installation cost, simplicity of testing, and reduced maintenance, they sum up the reasons for the popularity of the M-20 register.

NEW PACKING BRACKET

Other advantages are now being offered. One is a new packing bracket which gives added assurance that the register will arrive in good condition. It also makes the register easier to inspect and gives greater protection while being handled. This new bracket is intended to save you time and expense.

NEW ECONOMIES NOW POSSIBLE

Some of your older G-E registers may need renewal parts. Before undertaking such work, consider the cost of the parts and of the labor involved and then compare the total with the low price of the new M-20.

Perhaps a small additional investment will give you new registers and, with them, longer and more dependable service as well as many other time- and money-saving features. Ask a G-E meter specialist to tell you more about these new economies. Address the nearest G-E sales office, or General Electric, Dept. 6D-201, Schenectady, N. Y.

410-41

GENERAL ELECTRIC

State Power Ownership Subject of Investigation

A committee appointed by Lt.-Governor Geo. J. Hatfield will investigate the question of state ownership of public utilities in California. Composed of five state senators, the committee has been asked to review all phases of the proposition of the state acquiring privately owned utilities which market water and power in the state to the end of centralizing control of water and power.

The body has been given the power to employ technical help, investigate books and records of private concerns and will report its findings at the next session of the legislature. It is expected that Senator J. L. Seawell, author of the resolution creating the body, will head the committee. Hearings will be held at the will of the group.

●

M.W.D. Calls For Bids on Two Pumping Plants

The Metropolitan Water District of Southern California has called for bids for the construction of two of the five pumping plants to be erected on the main line of the Colorado River aqueduct. Bids will be opened at the district office at Los Angeles, Calif., November 19.

The two plants are the Intake plant on the Colorado River, about one and one-half miles above the Parker Dam site, and the Gene plant at Gene Wash reservoir, about two miles south of the intake and two miles west of the Colorado River. Bids for furnishing the pumps for all five of the pumping stations have been asked by the district and will be opened December 3 at Los Angeles.

The Intake plant will consist of a pump house, control house, transformer house, switch house, incline railway, delivery pipe and surge chamber, all included in one general contract. The Gene plant will be similar to the Intake plant with certain variations due to location and conditions of operation.

Each of the five plants ultimately will contain nine pumping units of about 200 sec.-ft. capacity each. As portions of the aqueduct are now being constructed only half capacity, and all of the latter will not be utilized at the outset, three units will be installed initially and other units added as the demand for water increases.

Manufacturers submitting bids for pumps will be required to provide the California Institute of Technology with a model pump for testing purposes.

●

Supreme Court Test of PWA Loans Speeded

Facilitating an immediate appeal to a higher court, the Supreme Court of the District of Columbia on Oct. 14 dismissed three cases brought by utility companies to block PWA loans to eight cities for municipal power plant construction. These cases now go to the District Court of Appeals, where a similar case brought by the Oklahoma Utilities Company against a loan to Hominy, Oklahoma has already been argued and a decision is pending. It is believed that the higher court will hear arguments on some, at least, of the additional cases before handing down a decision.

The dismissals applied to cases brought by the Alabama Power Company and the Texas Utilities Company against Administrator Ickes of PWA, seeking injunctions against PWA loans and grants to the cities of Decatur, Florence, Tuscumbia, Sheffield, Guntersville, Russellville and Hartsell, Ala., and Plainview, Texas.

An order returnable October 23 directing PWA to show cause why a proposed loan and grant of $100,000 to Yorktown, Texas, should not be enjoined was signed October 16 by Chief Justice Wheat of the District of Columbia Supreme Court. The complainant, Central Power & Light Company, claims that an investment of $198,000 would be endangered and that it has a charter to furnish electric power to the community dating to 1965.

●

• In Order to Carry out that section of the Public Utility Act which charges it with the regulation of interstate power matters, and to facilitate cooperation with the various state regulatory bodies, the Federal Power Commission will soon establish five regional district offices covering the entire United States. The location of these new offices has not yet been announced, but they will be spaced so as to minimize delay and increase efficiency in contacting the state officials.

First Square D Sales Conference

Vernon Brown, president of Square D Co., Inc., recently initiated an annual sales conference of all Western branch managers of the organization at the Los Angeles plant. New products, new sales promotion and general business conditions were subjects discussed. Here are all of the branch managers together with company executives and engineers

Reunion in Schenectady

Pacific Coast people and Pacific Coast news were the main topics of discussion when R. M. Alvord (right), San Francisco district manager, and S. M. Gates (center), Los Angeles district manager, met in the office of E. O. Shreve, General Electric vice-president, at Schenectady recently. Before going East Bill Shreve was manager at San Francisco

Seattle to Survey Puget Sound System

City Light engineers, under R. W. Beck, have undertaken a survey of the Puget Sound Power and Light Co.'s holdings in Seattle and the vicinity to the end of establishing data for the acquisition of that company's properties in Seattle by the municipal organization, a move recently proposed by J. D. Ross, City Light's superintendent.

Detailed information concerning customers, services and operations is to be secured, including valuations, operating costs, severance damages, etc. It is hoped thereby to show just how much duplication of installations and services prevails in the city and to obtain data on how much saving, if any, might accrue from a consolidation of the physical properties of the two utilities within the city.

Frank McLaughlin, president of the Puget Sound Power and Light Co., has pledged the cooperation of his company to supply data that will enable the investigators to arrive at a sound conclusion. He made it clear, however, that his company would not be responsible for the conclusions or recommendations which might result. Mr. McLaughlin asked that facts and not appeals to prejudice or idle promises be the basis for settling the question.

•

Government Agencies Resign from C.R.E.A.

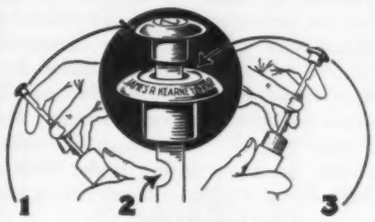
From Washington comes word that the Departments of Interior, Agriculture and Commerce have resigned from the National Committee on the Relation of Electricity to Agriculture organized in 1923 by the American Farm Bureau Federation and the N.E.L.A. The Rural Electrification Administration will do the government's share of protecting the farmers' use of electricity. "The problem is no longer one of electrical applications, but of rates and service," says Morris Llewellyn Cooke. That this does not apply to the Pacific Coast is evident from figures given in a recent issue of *Business Week*, which shows that 55 per cent of all farms in the three Pacific Coast states receive electrical service, a percentage higher than in any other section of the country. No district has lower rates.

•

• EFFORTS TO EXTEND the Central San Joaquin Municipal Utility District (Calif.) to include the western half of Fresno County were defeated in a recent election by a vote of 2,589 against annexation to 1,570 for annexation. The district proposed to erect or purchase an electric distribution system and is now served by the San Joaquin Light & Power Corp.

WHERE TO BUY . . . IN THE WEST

KEARNEY
FITALL
FUSE LINK



No. 1 for ½-in. Buttonhead
No. 2 for Flat Terminal
No. 3 for ¾-in. Buttonhead

Triple terminal—spring feature on low amperages—all metal corrosion resistant—accurate performance—one link for all 15,000 volt expulsion or tension type cartridges.

Bulletin 312 Gives Complete Information

JAMES R. KEARNEY CORPORATION ST. LOUIS, MO.

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Line Post
Insulators

Lapp Line Post Insulators eliminate radio interference due to both dirt and electro-static conditions.

Write for Bulletin No. 112 describing and cataloguing these insulators.

LAPP INSULATOR CO., Inc.
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LOCUST
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Oak
Brackets
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Pole Steps

Safety • Strength
• Lasting Economy

LOCUST PIN CO.
FRONT ROYAL, VA.

McLaughlin Glass Insulators

FOR TELEPHONE AND TELEGRAPH LINES

ADEQUATE STOCK
PROMPT DELIVERIES

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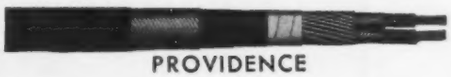

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Samples and Prices on Request

■ Concentrically wound bare neutral conductor, galvanized flat armor, weatherproof and flameproof finish.

For use on entrances without conduit.

Proof Against Theft of Current

PROVIDENCE INSULATED WIRE CO.
PROVIDENCE, R. I.

MAYDWELL & HARTZELL
INCORPORATED
FACTORY DISTRIBUTORS
LOS ANGELES SAN FRANCISCO

It's
BRASS BUSHED!

"Line up" with these Hemingray Advantages

1. Brass bushed smooth threads for insulator pin.
2. Greater mechanical strength.
3. Sustained high dielectric strength.
4. Unaffected by sudden temperature changes.
5. Withstand maximum insulator pin expansion.
6. Never age or deteriorate.
7. Controlled uniformity of product.
8. All surfaces impervious to moisture.
9. Tougher — withstand rough handling.
10. Clear and flawless for easy inspection.

Owens-Illinois Glass Company, Hemingray Division, Muncie, Ind.

HEMINGRAY Glass INSULATORS

Procedure Under Utility Act Announced By FPC

Practice rules to govern proceedings under the Federal Power Act of 1935 (Title II of the Public Utility Act of 1935) have been adopted and made public by the Federal Power Commission. They prescribe practices to be followed regarding applicants, complaints, petitioners, defendants, intervenors, protestants and respondents and define each of these. The Commission points out that the new rules in no way supersede or nullify previous rules relating to the Federal Water Power Act of 1920, which are still in effect. In cases falling under both acts the subject matter will determine which set shall be followed.

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Statistics Interpreted on Basis of Employees

An unique method of making a company balance sheet intelligible to employees and of bringing out the relationship of the items therein to the individual employees has been developed by R. E. Brennan, assistant treasurer and general auditor, Portland Electric Power Co., Portland, as published in the company's house organ, the *Synchronizer*, for September. Balance sheet items consolidated for PEPCo and all its subsidiaries are presented on the basis of dollars in each item per employee and a fine print note explaining what each item represents is appended. The number of employees of the company and its subsidiaries is listed by companies and totals 2,674.

The value of property, operating and non-operating and including intangibles, is shown to be $33,126 per employee. Cash on hand is placed at $479 per employee and inventories of operating materials and supplies and stock held for re-sale at $244.

On the liability side preferred and common stocks are outstanding in the amount of $8,692, while funded debt is $26,046 for each employee. Accrued taxes for the first seven months of 1935 are $298 per employee and it is further explained under this item that in 1934 17c of every dollar of gross revenue of Portland General Electric Co., principal subsidiary, was appropriated for payment of its 1934 tax bill.

Other items on both sides of the balance sheet are listed and explained in the same manner, and it is seen that the balance sheet balances at $37,663 per employee.

•

"Big Show" Opens New Salt Lake Supply Home

A big show of new merchandise inaugurated the new building of the Westinghouse Electric Supply Co. at 235 West South Temple St., Salt Lake City, early last month. Made necessary by the expansion of business since the company took over the former Inter-Mountain Electric Co. in 1933, the new building provides 17,340 sq. ft. of warehouse space with covered private trackage, labor saving ramps and depressed truck loading stations. The new offices provide display rooms of ample capacity, a ladies lounge, stationery and literature rooms, private offices and sales meeting rooms.

D. M. Salsbury, manager of the Salt Lake offices, arranged the house warming ceremony so that C. A. Meier, Pacific Coast merchandise manager, and A. P. Murphy, Pacific Coast advertising manager were present to take part in the ceremony and to give at the same time strong selling messages on Westinghouse appliances.

The Salt Lake house serves the Utah, Idaho, Wyoming, Nevada territory with portions of Oregon and Montana.

New home of Westinghouse Electric Supply Co. in Salt Lake City where enlarged facilities were made necessary by increased business. D. M. Salsbury is manager

Utilities Report
Increased Earnings

Reports from various operating companies indicate that 1935 very probably will record marked improvements in operating income. Some of the third quarter figures are as follows:

Southern California Edison Co., Ltd., reports gross earnings of $10,501,551 and net earnings of $4,233,888 for the third quarter, representing 76 cents per share on the common stock after payment of all preferred dividends. This figure compares very favorably with earnings of 47 cents a share on the common made in the same quarter of 1934. Gross earnings for the nine months ending Sept. 30, were $27,776,-592 as compared with $27,018,878 for the same period last year.

British Columbia Power Corp.'s gross income for the year ending June 30th was $13,030,091, from which total expenses of $8,839,513 bond interest and preferred dividends were deducted to leave $185,073 as a balance for dividends on class A shares. For the same period ending June 30, 1934, the gross revenue was $12,626,674, the current increase being enjoyed by all departments. Capital expenditures during the year totaled $460,173.

Seattle City Light's report for July showed a sharp gain in operating revenues over the same month last year. Receipts for July 1935 were $391,844 compared to $372,676. Operating expenses were reduced three per cent. Merchandising sales by the organization more than doubled, sales for July 1935 being $29,624 against $13,500 for the same month in 1934.

Pacific Lighting Corp. earned $4.05 a share on outstanding common stock, for the 12-month period ending Sept. 30. This compares with earnings of $2.37 a share for the same period last year.

Puget Sound Power and Light Co. reports a gain of $48,840 in gross earnings in Sept., 1935, over Sept., 1934. Income from the sale of power was up five per cent and merchandising sales for the first nine months of 1935 were 139 per cent of those of the same period last year.

●

• A TEMPORARY RESTRAINING order to prevent the sale of $466,000 in bonds voted by Lodi, Calif., for the erection of a hydroelectric plant has been granted by the district Federal Court in San Francisco in a suit brought by Pacific Gas and Electric Co., to enjoin both the sale of the bonds and the receipt of a $148,000 Federal grant. The company, which now furnishes power wholesale to the city, contends that the city-owned plant would render useless its $150,000 Lodi substation and deprive it of $78,000 in annual revenue "without due process of law." The suit also attacks the constitutionality of the contract between the city and the Federal government.

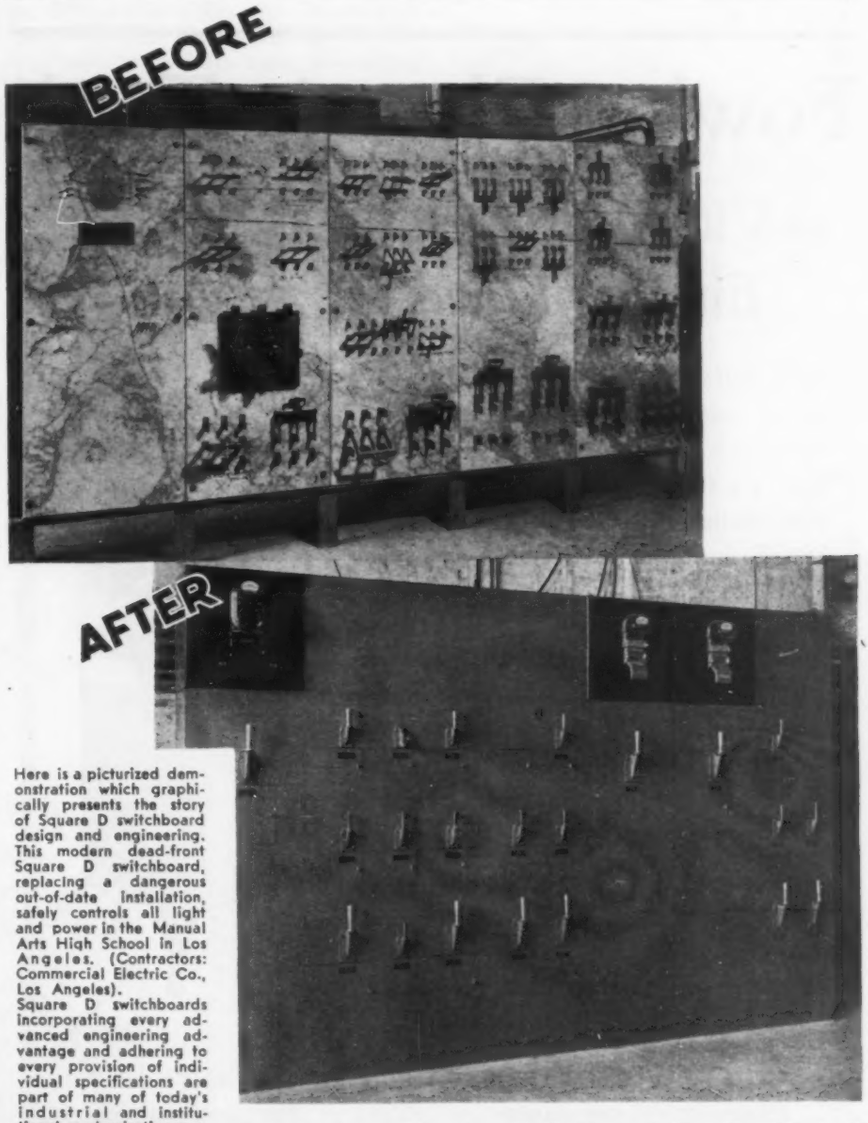
●

• THE QUESNEL LIGHT & WATER CO. has started construction of a small automatic hydro-electric power plant at Baker Creek to replace the present diesel plant on the Quesnel River, near Quesnel, B. C.

The new dam will be 100 ft. in length by 25 ft. in height and will be 3½ miles up Baker Creek from Quesnel. The power house will be built adjacent to the dam. Work on the erection of the dam, power house and transmission line will commence as soon as the cutting of the road to the site is completed. It is expected that the plant will be in operation by the latter part of November.

●

• THE FEDERAL TRADE COMMISSION has passed from investigating utilities to looking into the affairs of the electrical manufacturers. A complaint has been issued agent N.E.M.A. citing sixteen companies on the charge of unlawful combination, conspiracy and agreement to restrain competition in the marketing of power cable and wire products.



Here is a picturized demonstration which graphically presents the story of Square D switchboard design and engineering. This modern dead-front Square D switchboard, replacing a dangerous out-of-date installation, safely controls all light and power in the Manual Arts High School in Los Angeles. (Contractors: Commercial Electric Co., Los Angeles).
Square D switchboards incorporating every advanced engineering advantage and adhering to every provision of individual specifications are part of many of today's industrial and institutional modernization programs.

CALL IN A SQUARE D MAN

SQUARE D COMPANY
ELECTRICAL EQUIPMENT INC.
LOS ANGELES · SAN FRANCISCO · DENVER · HOUSTON
SQUARE D COMPANY · DETROIT · MILWAUKEE

Contractors Contest State Tax Ruling

Taxes of a million dollars a year for three years are involved in litigation between the state of Washington and the Grand Coulee dam contractors. Legal questions in the cases of David H. Ryan versus the state and Silas A. Mason company versus the state tax commission will soon be argued before the Thurston county superior court at Olympia,Wash. The Mason company, heading the Mason-Walsh-Atkinson-Kier company, is general contractor for the Grand Coulee dam and Ryan is the general contractor for the construction of the government railway from Odair to the dam site.

The state of Washington has been endeavoring to impose on the contractors the general business and occupation tax. Under the state law the state proposes to tax income from contracts and subcontracts and to tax the purchase of tangible personal property such as materials, machinery, food, etc. Counsel for the contractors will argue against the application of taxes against them on two grounds; first, that by virtue of their contracts they are federal agents or instrumentalities; second, that their contracts are performed wholly upon territory owned by the United States government, over which the state has no taxing jurisdiction. The case has nation-wide importance because it sets a precedent and contractors at Bonneville and on other similar projects will be affected.

•

FPC Surveys Get PWA Funds

Continuation of the power and rate surveys by the Federal Power Commission in 1933 has been assured by the allocation of $200,000 from PWA funds for this purpose. The money will enable the Commission to carry on the work until about February 1, 1936, by which time Congress is expected to appropriate additional funds.

Major points to be covered in the reports include: Characteristics of private companies and municipal utilities; sources of power; aggregate and unit revenues and sales of energy by classes of customers; bills for various consumptions, covering various classes of retail service; trend of typical residential bills over a ten-year period; trend of average use and average revenue per kilowatt-hour in residential service; equitableness of rates among residential, rural, commercial and industrial customers; promotional rate policies; uniformity of rates, special rate contracts; rural electrification.

•

Sales Lecturer Starts Fresno Fall Campaign

Inaugurating their annual refrigeration fall campaign, dealers in the San Joaquin Valley and on the lines of Midland Counties Public Service Co. were invited to a big dinner Oct. 25 in Fresno to hear the program for the year. The meeting was called under the auspices of Valley Electrical Supply Co., the cooperative dealer organization in Fresno. Featured speaker at the dinner was Mr. Sam Warswick, prominent sales lecturer and teacher of salesmanship.

Plans for the fall merchandising not only of refrigerators but other appliances were discussed at the meeting and the cooperation and assistance of the Valley Electrical Supply Co. were pledged by Frank Easton and J. V. Berry.

A series of meetings throughout the territory was also contemplated.

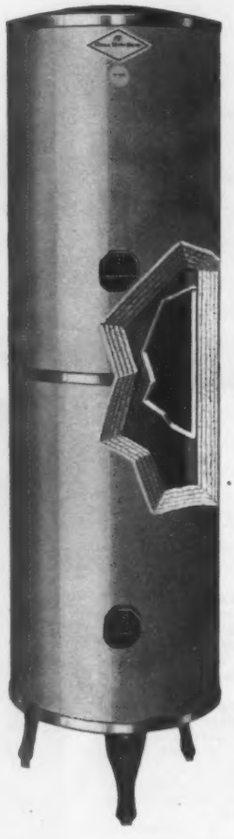
•

• THE PARK STREET double bascule bridge was opened last week in Oakland with all kinds of new electrical control equipment. It is the first bridge to have a public address system to be used both to warn approaching autos in foggy weather and also to communicate with boats. Romaine Myers was electrical engineer and the installation was made by Central Electric Co.

Fowler *Electric* Tank

is Vitrous Porcelain Enamel Lined

—a long-life, low cost tank that sells like hot cakes!



Here's a tank that embodies the happy combination of QUALITY and LOW PRICE. Inside it is as smooth and scale-proof as glass. "Clamp on" heating units apply low intensity heat over a wide area, and exceptionally efficient insulation holds radiation to a minimum. So, beside enjoying unusual sales advantages, the Fowler Tank STAYS SOLD because it is economical in operation.

For proof of the unusual salability and efficiency of this tank, let us give you a list of electric companies featuring it. They know from experience! More than 25,000 Fowler Electric Tanks now in use. Write for complete information.

FOWLER MANUFACTURING COMPANY

SOUTHEAST 8TH AND SALMON — PORTLAND, OREGON

FOWLER *Electric* TANK

"LONG LIFE—LOW COST"

...about People

Industry Mourns Death of Allen Babcock

Allen Harwood Babcock, widely known electrical consulting engineer, died at Eureka, Calif., October 26th of complications resulting from a heart attack. Born August 12, 1865, he was educated in California and a graduate of the University of California and Lehigh University. In his early work in the electrical industry he was affiliated with the Thompson-Houston Co., the General Electric Co., and in later years prominently identified with the development of the electrical utilities in California.

Following the completion of this work, Mr. Babcock was engaged by the Southern Pacific Co. to make preliminary studies and estimates for the electrification of the then steam-operated suburban lines radiating from Oakland and Alameda Moles to the Oakland, Alameda and Berkeley suburban territory. Following these preliminary studies, which were to some extent interrupted by the San Francisco earthquake and fire, the Southern Pacific Co. decided to proceed with the program, and Mr. Babcock was placed in practically complete charge of all the electrical activities of the work, including the design of the power station and substations; the design of the overhead and of cars and equipments. It was the first 1200-volt electrification in the United States. The fact that since service was inaugurated in 1911 practically no change of any kind has been deemed necessary in the system, is a tribute to the ability and foresight of the electrical engineer who designed it. He retired from the Southern Pacific Co. in 1932 and devoted much of his time to his hobby of radio communications.

In 1918, Mr. Babcock was a member of the Lick Observatory Expedition that established camp at Goldendale, Washington, to observe the total eclipse of the sun, and again in 1923, he accompanied Dr. W. W. Campbell (Director of Lick Observatory) and party, to Lower California, on a preliminary reconnaissance to locate a point in the true path of the total eclipse of the sun which was to occur later that year.

As a Lieutenant Commander in the United States Naval Reserve, he accompanied the United States Fleet on the annual maneuvers in Hawaiian waters in 1925, where he pioneered in research and experimental work with short wave radio communication.

Mr. Babcock was an active and enthusiastic member of many civic and professional societies as well as a writer of note. His affiliations included the A.I.E.E. of which he was a Fellow; the San Francisco Chamber of Commerce; the Astronomical Society of the Pacific; and the American Radio Relay League. He was a Lt. Commander in the United States Naval Reserve (retired).

According to his last wish, he was buried at sea off the Golden Gate from the quarterdeck of the U.S.S. New Orleans. His widow and two sons, Thomas F. and John W. Babcock, survive.

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• RALPH H. FLYNN, who was assistant editor of ELECTRICAL WEST from 1930 to 1933 and later was with the sales department of the Pacific Gas and Electric Co., has resigned from the advertising department of the San Joaquin Light & Power Corp., Fresno, to become Eastern manager of ELECTRICAL WEST with headquarters in New York. He will represent the paper in the entire Atlantic territory. He will be succeeded at Fresno by Ralph Townsend.

•

• H. M. CRAWFORD, general sales manager of the Pacific Gas and Electric Co., was elected president of the Pacific Coast Gas Association at the annual convention of that organization at Pasadena recently.

• GEORGE E. HONN CO., San Francisco, has been appointed sales representative for Pyrex power and radio insulators in the northern California territory, according to an announcement made by W. H. Taubert, sales manager of the Insulation Division of the Corning Glass Works. Mr. Taubert is on an extended trip through the West and will visit all of the principal cities before returning to his headquarters at Corning, N. Y.

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• R. A. CROSBY, illuminating engineer, Los Angeles Gas & Electric Corp., has been elected president of the Southern California Illuminating Engineering Society. Ted Neal, of Luminous Structures, Inc., was re-elected secretary-treasurer.

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• P. H. YELTON, superintendent at Victorville, for the Southern Sierras Power Co., was recently elected president of the Victorville Chamber of Commerce. Mr. Yelton was one of the prize winners in last year's problem paper contest of the P.C.E.A.

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• MARINE ELECTRIC CO., San Francisco, held its annual outing and dinner for employees recently, at which time William Cathcart, president, was presented with a pen and pencil set by the staff.

EXTRA!!

ELECTRICAL INSPECTORS VOTE 4 TO 1 IN FAVOR OF A MORE GENERAL USE OF THE KNOB AND TUBE SYSTEM

Porcelain is still KING OF ALL electrical insulation materials! A recent survey conducted by this organization proves it! By a landslide vote Electrical inspectors for municipalities, insurance and utility companies favored the use of knob and tube as outlined in the National Electrical Code, 1935 edition. They went even further and by a 4 to 1 vote favored an even more general use of this wiring system. Their reasons: Absolute SAFETY, LONG LIFE, lower cost per outlet, more adaptable to damp location wiring, minimum accidental shock hazard, etc. A complete analysis of this survey and installation rules will be sent to you without cost or obligation. Every Electrical contractor who wants to increase his sales and profits should write immediately to Dept. C.

Illinois Electric Porcelain Co., Macomb, Ill.
Porcelain Products, Inc. Parkersburg, W. Va.
Superior Porcelain Company Parkersburg, W. Va.
Central Porcelain Company Columbiana, Ohio
Universal Clay Products Company Sandusky, Ohio
Ceramic Specialties Co. East Liverpool, Ohio
Knox Porcelain Corporation, Knoxville, Tenn.

USE Porcelain Safety Economy Permanence

STANDARD ELECTRICAL PORCELAIN MANUFACTURERS

201 N. WELLS ST., CHICAGO, ILLINOIS

Bristol's West Coast Service Laboratory and Assembly Plant

Build new life *plus* automatic control *into your old Recorders*

PERHAPS you, too, have a number of Bristol's Recorders that have given fine service for many years. If so, don't think of throwing them away. They're still good as gold,—worth real money to you.

Re-conditioning will give them new life. Better yet, modernization into recorder controllers will enable them automatically to control your temperatures or other process conditions within the closest tolerances and make possible exactingly uniform product quality.

Having the work done here by Bristol's West Coast Service Laboratory and Assembly Plant instead of thousands of miles away will save both time and money. Write.

THE BRISTOL COMPANY

Branch Offices: Rialto Bldg., San Francisco
747 Warehouse St., Los Angeles
Branch Factory: 311 Minna St., San Francisco

TRADE MARK
BRISTOL'S
REG. U. S. PAT. OFF.

Bristol's West Coast Service Laboratory and Assembly Plant

Northwestern Electric Co. Announces Personnel Changes

Re-alignment of staff and line organizations in Northwestern Electric Company, Pacific Power & Light Company, Portland Gas & Coke Company, allied companies of Portland, Ore., has resulted in separation of engineering and accounting functions under three separate chiefs responsible to the general managers. The reorganization was inspired by a desire to bring customer contact functions into a more direct relation with the customers of each separate company in the interest of better service to that company's customers.

In the engineering departments, E. F. Pearson has been made chief engineer of the Northwestern Electric Company with Bruce Aaron and Corbett McLean as assistant engineers and John Summersett in charge of drafting. H. H. Schoolfield is chief engineer of Pacific Power & Light Company with D. R. McClung and R. J. Davidson as assistant chiefs and Eldon Foreman in charge of drafting. J. E. Yates, assistant engineer under Mr. Schoolfield, will devote part time to the commercial department of Pacific Power & Light Company as sales engineer in charge of air conditioning, rural line development and commercial power.

•

Western Executives Elected To Byllesby Board

At a recent meeting of stockholders, W. F. Raber, president of the San Diego Consolidated Gas and Electric Co.; C. M. Brewer, president of the Mountain States Power Co. and the California-Oregon Power Co.; and W. N. Clark, president of the Southern Colorado Power Co. were elected to the Board of Directors of the Byllesby Engineering and Management Corp. This action follows the sale, recently announced by the Standard Gas and Electric Co., of the stock of the Byllesby Corp. to operating companies in its system. A majority of the members of the new board of directors are the executive officers in direct charge of operating companies.

•

• W. N. CLARK, president of Southern Colorado Power Co., received the annual award of merit presented by the Rocky Mountain Electrical Assn. for the most outstanding contribution toward the advancement of the electrical industry by an individual or company in the Rocky Mountain region during the past year. The award, a diamond-studded charm, was conferred by G. W. Buck, president of the association. Mr. Clark has been with the power company since 1901. Starting as construction foreman he was later manager of the Mountain Division, including Cripple Creek and Canon City districts. In 1924 he was made vice-president and general manager and in 1931 promoted to the presidency of the company. He has been active in civic work and particularly during the past few years in emergency relief committee activity.

PROFESSIONAL SERVICES

BYLLESBY ENGINEERING AND MANAGEMENT CORPORATION
Consulting Engineers
General design engineering, investigations, reports and estimates, and construction supervision for new or modernization projects in the utility or industrial fields.
231 South La Salle Street — Chicago, Illinois

ELECTRICAL TESTING LABORATORIES
Electrical Photometrical, Chemical and Mechanical Tests. Inspection of Materials and Apparatus at Manufactory.
80th St. and East End Ave., New York

ARTHUR R. KELLEY
CONSULTING ENGINEER
Reports and Valuations, Public Utility Industrial Properties
Edison Bldg. — Los Angeles

Crapo
GALVANIZED PRODUCTS

Where strains and stresses are heaviest, where corrosion takes its greatest toll, Crapo Galvanized Steel Strand and Telephone Wire long ago demonstrated their outstanding superiority. The heavy *pure* zinc galvanized coating, maximum tensile strength and proper ductility insure longer life and lower maintenance cost. Insist upon Crapo Galvanized Products for better performance under all conditions!

Indiana Steel & Wire Co.
Muncie, Indiana

Crapo Galvanized Products are available in all standard grades and sizes.

...about the Trade

• PRACTICING what it preaches, the Portland General Electric Supply Corp., according to George Boring, district manager, will move on Nov. 20 to new quarters in the completely renovated building formerly occupied by the Studebaker automobile agency. At least $45,000 is being spent on the building to re-equip it for a model electrical wholesaling warehouse. It is a four-

George Boring, Portland Manager of General Electric Supply Corp., announces new quarters.

story 100 x 120 ft. building and will be equipped with freight elevators ample in size to take a loaded truck to any floor of the building. Illumination will be by means of the new General Electric high efficiency mercury vapor arc system, the first installation of its kind in the Pacific Northwest. Six completely equipped show and demonstration rooms will be used to display merchandise for dealers.

•

• CLINTON T. HURD, for the past three years local manager of the Portland branch, Jobbers Supply Co., left that position Oct. 15 to join the Allis-Chalmers organization in the Northwest as head of the central station department covering both Oregon and Washington. He will maintain headquarters in Portland. He is succeeded in the Jobbers Supply Co. by Donald E. Roddy who has been with that concern in a clerical capacity for ten years.

•

• GEORGE H. EBERHARD CO., wholesale distributors for Standard electric stoves, Grunow refrigerators and radios and a number of other electrical lines, announced the opening of new sample rooms at its offices, 290 First St. at the corner of Folsom St., San Francisco.

•

• KENT A. HAWLEY, chief engineer of Victor Insulators, Inc., Victor, N.Y., who has been on the Pacific Coast for the past few months, announces the appointment of H. B. Squires Co., representative for the San Francisco and Northwest territories; Farnham & Cunningham as representatives in Southern California; L. Vernon Wilson, Phoenix, Ariz., the representative in the Intermountain area; and O. H. Davidson as representative in the Denver territory.

•

• THE STANDARD ELECTRIC STOVE CO., of Toledo, Ohio, announces the appointment of the following distributors: Gilbert Brothers, Inc., Portland, Ore., handling the Oregon territory; George H. Eberhard Company, San Francisco, handling northern part of California.

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• THE HORTON MANUFACTURING CO. of Fort Wayne, Ind., announces the appointment of Electrical Distributing, Inc., 525 N. W. Tenth Ave., Portland, Oregon, as a distributor of its washing machines and ironers.

•

• S. J. MCCORMICK, 430 West 5th Ave., Portland, Ore., was appointed distributor for Automatic washers and ironers for the State of Oregon by the Automatic Washer Co. of Newton, Iowa, according to Roscoe N. Bradt, sales manager.

•

• JOHN ERIKSON, manufacturers representative, 153 Kearny St., San Francisco, has been appointed northern California and Nevada representative for the NESCO line of roasters and cooker pots, manufactured by National Enamel Stamping Co.

•

D. E. STANFORD CO. has been appointed distributors in California, Arizona and Nevada for the Swartzbaugh Manufacturing Co., Toledo, Ohio appliance manufacturers.

•

• G. B. SCHYLER, vice-president of the Apex-Rotarex Manufacturing Co., Oakland, has just been made a director of the parent concern of Cleveland, Ohio, according to word from that factory.

S. F. League Stages Golf Tournament

The San Francisco Electrical Develoment League held its first golf tournament in many years at the Millbrae Country Club, Sept. 26. Al Nicoll, Graybar Electric Co., San Francisco, was appointed chairman of the committee by President Earl Crellin, and provided a day of sports and an evening of fun whose success gave rise to a demand for a promise of its repetition at regular intervals in the future.

Gus Paul, of K. P. F. Manufacturing Co., was the low gross winner of the tournament. Clyde Allen, Edison General Electric Appliance Co., took honors for low net. After the tournament a dinner was held at the Clubhouse, during which Ernest Ingold acted as master of ceremonies, and distributor of prizes. Conn Franke, mayor of Stockton, and prominent electrical contractor there, was an honored guest for the affair and invited the League to hold its next tournament in Stockton.

Running highly successful at the San Francisco Electrical Development League Gold Tournament was Al Nicoll, Graybar Electric Co., whose foursome included Art Rowe, Les Seibert, and President Earl Crellin

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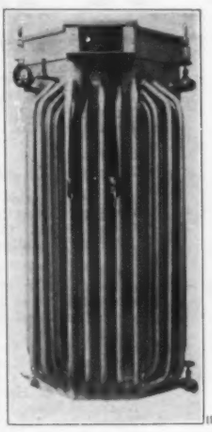
GEORGE H. CURTIS has joined the Incandesant Supply Co., San Francisco distributors of lighting fixtures, appliances and wiring supplies.



Want to SAVE Money — on TRANSFORMERS?

★ Because we are specialists in the transformer field we can manufacture transformers better and at a saving to our customers. Twenty-five years of experience enables us to build reliable transformers to meet every specification.

We have equipped our modern plant to render the finest transformer service in the West, both for economical repairing and for quick order filling on new transformers in all voltages and sizes.

Write or call our nearest agent for satisfactory transformer service.

GARDNER ELECTRIC MFG. CO.

4227 Hollis Street — Emeryville, Calif.

SEATTLE—Nicolay Sales Co., 304 Westlake North; DENVER—Kranefeld Eng. Co., 3417 E. 14th Ave.; LOS ANGELES—Utilities Supply Co., 1736 E. 15th St., Decla Sales Co. (Neon Only) 342 Towne St.

...in New Equipment

Range Heater Switches and Thermostats

Introduction to the trade, of three new toggle type heater switches and a new thermostat for electric ranges has been made by the Hart Mfg. Co., Hartford, Conn. The heater switches are for alternating current only and employ a new type of slow break action. They are said to contain fewer parts and are of heavy construction to insure longer life.

Rural Transformers and Regulators

Allis-Chalmers Manufacturing Co., Milwaukee, Wis., has announced a new low cost branch feeder regulator and a new line of distribution transformers intended particularly for low cost rural extensions. The regulator, designated as Type BFR, has a 10 per cent range in eight 1¼ per cent steps. It is available for voltage ranges from 2,400 to 13,200 volts, single and three phase. The transformers are designed for four-wire systems with solidly grounded neutrals. They are provided with one bushing through the cover and include coordinating gap and simplified hanging arrangement. They are available in 1- and 3-kva. ratings for voltages from 2,400 to 7,620.

"Visibility Meter" Determines Individual Seeing Needs

The "Visibility Meter", a new scientific tool which permits the seeing specialist accurately to determine proper seeing conditions for individual persons and to appraise relative visibility of various objects, has been designed and is being marketed by the General Electric Co., Nela Park, Cleveland. It is said to supplement the sight meter as a practical and effective tool in the art of selling light for

better sight. Whereas the sight meter measures quantity of light, without any direct connection to the need of the specific person's eyes, the Visibility Meter enables the seeing specialist to determine the right amount of light needed by each particular person to perform a given task. The instrument is held to the eyes of the subject after the fashion of using opera glasses, and the observer after making certain adjustments takes readings giving the number of footcandles which science recommends not only for specific tasks but also for the eyes performing the task. The meter measures approximately 7″x3″x½″, is of black Bakelite construction, light weight, comes in a leather-covered case and is sold by General Electric at $35.00.

Arvin Heater

Noblitt-Sparks Industries, Inc., Columbus, Ind., announces two new models of the Arvin fan-forced electric heater. Model No. 200 is finished in green morocco with a chromium grille and incorporates a switch on the heater plug to turn the fan motor on and off. Model 100 has a handle on top to aid portability and is finished in green and black. On both heaters the motor is of the induction type.

Magnetic Motor Starting Switches

Colt's Patent Fire Arms Manufacturing Co., Hartford, Conn., has recently added to its line of switches, the new Type "MS" Colt-Noark Magnetic Motor Starting Switches. They are manufactured in two styles, one for local control up to and including 7½ h.p., and the other for remote control in one size up to and including 7½ h.p., and another size up to and including 25 h.p. The mechanism is said to be capable of withstanding the constant rough handling usually accorded a switch in a shop or a mill. Minimized arcing and prolonged life is obtained by having each pole broken at two points. The switching mechanism, actuated by an electro magnet and having self-adjusting contacts that are kept clean by a wiping motion as they seat, is mounted on Bakelite. Hand reset, overload protection and undervoltage protection or release is standard on both styles.

"Vocalphone", Sound Transmitting Device

"Vocalphone, a device manufactured by the Doorman Mfg. Co., Los Angeles, permits vocal communications to be carried on in homes, offices, stores and factories without the need of earphones or the speaker being within short range of the transmitter. Talking in an ordinary conversational tone from any part of a room, the sound is picked up, amplified and transmitted to any desired point. There is no voice distortion even when amplification is carried to a high point, it is claimed. The system can be installed in any type of building. It employs four standard radio tubes and operates on regular alternating current without batteries.

Luminous Candles

General Electric Co., NELA Park announces a new and unusual line of Christmas Tree lights which includes an electric candle whose filament sparkles with all the warmth of the old-fashioned wax candle and a luminous candle which glows from base to tip with a cheery color. They are available for either series or multiple strings.

WHERE TO BUY IT IN THE WEST

Selling Hints

FOCUS THE BUYER on your listing in "Where to Buy" with a display box. This advertising SELLS goods and costs so little.

ELECTRICAL WEST
883 Mission St. San Francisco

Air Conditioning
Frigidaire Corp.
General Elec. Co.
Graybar Elec. Co., Inc.

Anchors, Guy
James R. Kearney Corp.

Appliances, Household
Apex Rotarex Mfg. Co.
Edison Gen. Elec. Appliance Co., Inc.
General Elec. Co.
General Elec. Supply Corp.
Graybar Elec. Co., Inc.
Lindemann & Hoverson Co., A. J.
Malleable Iron Range Co.
McGraw Elec. Co.
Waters-Genter Div.
Westinghouse Elec. Supply Co.

Boxes
General Cable Corp.
General Elec. Co.
Russell & Stoll Co.

Bus Fittings
Burndy Eng'g Co.
General Elec. Co.

Brackets, Wood
Locust Pin Co.

Buses
Aluminum Co. of America ..

Cable Accessories
General Cable Corp.
General Elec. Co.
John A. Roebling's Sons Co.

Cables
Aluminum Co. of America
American Steel & Wire Co.
Columbia Steel Co.
Crucible Steel Co. of America
General Cable Corp.
General Elec. Co.
Graybar Elec. Co., Inc.
Maydwell & Hartzell, Inc.
National Elec. Products Corp.
Providence Insulated Wire Co.
John A. Roebling's Sons Co.
Westinghouse Elec. & Mfg. Co.

Carbon Brushes
National Carbon Co., Inc.

Carbon Products
National Carbon Co., Inc.

Central Station Equipment
Tom Wood

Chimes
Square D Co., Inc.

Circuit Breakers
General Elec. Co.
I-T-E Circuit Breaker Co.
Westinghouse Elec. & Mfg. Co.

Cleaners, Vacuum
Apex Rotarex Mfg. Co.
Clements Mfg. Co.
Cramer Elec. Co.

Coil Winding
Jeffries Transformer Co.

Where to Buy It in the West—*Continued*

Compounds, Insulating
John C. Dolph Co.
General Cable Corp.
General Elec. Co.

Condensers, Electric
Allis-Chalmers Mfg. Co.
J. G. Corrin
General Elec. Co.
Westinghouse Elec. & Mfg. Co.

Conduit
Aluminum Co. of America
General Elec. Co.
Youngstown Sheet & Tube Co.

Conduit, Underground
Fire Proof Wall Co.
Johns-Manville Corp.

Connectors
Burndy Eng'g Co.
James R. Kearney Corp.

Controllers
Clark Controller Co.

Cutouts
James R. Kearney Corp.
General Elec. Co.
Westinghouse Elec. & Mfg. Co.

Demand Control
General Elec. Co.
Wesix, Inc.

Distribution Specialties
General Elec. Co.
James R. Kearney Corp.
W. N. Matthews Corp.
Maydwell & Hartzell, Inc.
St. Louis Malleable Casting Co.

Electrodes, Arc Welding
John A. Roebling's Sons Co.
General Elec. Co.

Fans
General Elec. Co.

Farm Electrification Equipment
General Elec. Co.

Fittings, Conduit
General Elec. Co.

Fixtures, Lighting
General Elec. Co.
Russell & Stoll Co.
Smoot-Holman Co.

Floodlighting
General Elec. Co.
S & M Lamp Co., Inc.
Smoot-Holman Co.

Fuses
Trico Fuse Mfg. Co.

Gasoline
Union Oil Co.

Generators
Allis-Chalmers Mfg. Co.
General Elec. Co.
Westinghouse Elec. & Mfg. Co.

Graphite Products
National Carbon Co., Inc.

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Index to Advertisers
November, 1935

Allis-Chalmers Mfg. Co.	13
Aluminum Company of America	12
American Steel & Wire Co.	14
Bristol Co., The	60
Burndy Engineering Co.	64
California Oregon Power Co.	2, 3
Columbia Steel Co.	14
Fowler Mfg. Co.	58
Frigidaire Corporation	11
Gardner Electric Mfg. Co.	61
General Electric Co., Nela Park	10
General Electric Co., Schnectady	15, 53
Graybar Electric Co., Inc.	8
Hart Mfg. Co.	6
Idaho Power Co.	2, 3
Indiana Steel & Wire Co.	60
International Nickel Co.	9
Jeffries Transformer Co.	64
Kearney Corp., James R.	55
Lapp Insulator Co., Inc.	55
Locust Pin Co.	55
Maydwell & Hartzell, Inc.	55
McLaughlin Glass Co.	55
Mountain States Power Co.	2, 3
National Carbon Co., Inc.	63
National Electric Products Corp.	Front Cover
Northwestern Electric Co.	2, 3
Owens-Illinois Glass Co.	56
Pacific Coast Electrical Bureau	Back Cover
Pacific Gas and Electric Co.	Inside Back Cover
Pacific Power & Light Co.	2, 3
Portland General Electric Co.	2, 3
Professional Directory	60
Providence Insulated Wire Co.	55
Puget Sound Power & Light Co.	2, 3
Robertshaw Thermostat Co.	5
Savage Distributing Co.	64
Southern California Edison Co. Ltd.	Inside Front Cover
Square D Company	57
Standard Electric Stove Co.	64
Standard Electric Porcelain Mfrs.	59
Steiger & Kerr Stove & Foundry Co.	4
Utah Power & Light Co.	2, 3
Washington Water Power Co.	2, 3
Wesix, Inc.	7
Wiegand Co., Edw. L.	16

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